PUBLIC HEALTH REPORTS

VOL. 35 NOVEMBER 25, 1920 No. 48

A METHOD OF CLASSIFYING FAMILIES ACCORDING TO INCOMES IN STUDIES OF DISEASE PREVALENCE.[1]

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I. The Use of Income Facts in Studies of Disease.

In studies of disease prevalence and incidence, emphasis is being laid nowadays upon the possible influence of environmental conditions that formerly were given no more than cursory consideration. This tendency undoubtedly is in line with the realization that the occurrence of most diseases, especially those which are of the non-infectious type, is more or less intimately dependent, not upon a single condition or set of conditions, but upon the mass of interrelated conditions under which a population lives. Partly, at least, this is also due to the wider comprehension of the necessity of applying certain fundamental principles of statistical analysis to public health studies. One of these principles is, that before the effect of any single condition can be accurately evaluated, the possible effect of other conditions must be considered and measured.

This conception, however, has made the task of investigation and analysis much more difficult. With the idea of finding out *all* that there is to be known about the conditions that affect the prevalence of a disease, schedules for obtaining data often have been greatly amplified. In at least some collections of data relating to living conditions or relating to some one set of living conditions, such as housing, quite detailed descriptions for each individual or each family have been secured. Desirable as refinement of detail may be for the exact determination of the influence of some one factor, the student is likely to become bewildered and to lose himself in the mass of interrelated facts that often can not be analyzed statistically, or, if analyzed, yields indefinite results because of chance irregularities due to the minuteness of the subdivision of the data. He is driven by necessity, if he is to make any definite progress, to find some general, yet sufficiently accurate, expression representing some or most of the differences in living conditions of a population—an expression which he can use as an aid in eliminating extraneous influences before proceeding to the analysis of the specific condition which is suspected of playing an influencing or causative rôle.

[1] From Field Investigations of Pellagra, United States Public Health Service. Submitted for publication, Sept. 7, 1920.

Obviously, it is desirable that this general expression, this index of living conditions, should, for purposes of accuracy and convenience, be expressed in *numerical* form. This need is seen in the fact that too often otherwise carefully made epidemiological studies are marred by comparisons of groups within a specified population class defined by such indefinite terms as "in moderate circumstances" or as "poor," "fair," and "well-to-do," or even as "mill workers," "mechanics," "laborers," entirely ignoring the fact that one family of "laborers" may be prosperous while another is in extreme poverty. The desired index must then be both specific and commensurable, and the only single index yet discovered which meets these requirements and which also conveniently and accurately approximates the whole complex of conditions under which a family lives is family income. The reason for this is obvious. Whether or not nutritious diet, sanitary housing, adequate clothing, proper facilities for the care of children, opportunity for wholesome recreation, and sanitary neighborhood conditions can be enjoyed is determined mainly by the family's financial status. Ignorance of hygiene is more pronounced and more widespread among the "poor" than among the "moderately well-off" or the "well-to-do." The partnership of poverty and ill-health has become proverbial. Only recently, however, has it been afforded quantitative expression by the results of actual studies. Thus it has been found that among families of textile workers in South Carolina the rate of disabling sickness in the poorest class was 70 per 1,000 as against less than 19 per 1,000 in families financially better off; that among garment workers in New York City the proportion classed as poor in nutrition or as anemic or as affected with tuberculosis was definitely greater among those receiving the lowest annual incomes than among those who were better paid; that infant mortality bears an inverse relationship to the annual earnings of the father; that a rise in retail prices, unaccompanied by a commensurate increase in income (a situation characterizing certain wage-earning families in New York City), resulted in the restriction of the diet of these families in certain important respects, and is reported to have been reflected in an increased incidence of sickness as well as in a retardation of recovery from illness.[2]

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[1]Reference may be made to the following studies:

Sydenstricker, Edgar, Wheeler, G. A., and Goldberger, Joseph, Disabling Sickness Among the Population of Seven Cotton-Mill Villages of South Carolina in Relation to Income: Public Health Reports, Nov. 22, 1918.

Warren, B. S., and Sydenstricker, Edgar, Health of Garment Workers—Relation of Economic Status to Health: Public Health Reports, May 26, 1916.

Duke, Emma, and others, Infant Mortality Studies: Children's Bureau, U. S Dept. of Labor.

Harris, L. I., Some Medical Aspects of the High Cost of Living: American Journal of Public Health July, 1919.

The instances just cited illustrate the fact that income is, for many purposes, a satisfactory index of the general quality of the environment. Since it is a usually accepted fact that bad environment favors the development of disease, it is not at all surprising that low income is commonly associated with a high general morbidity rate. If sickness is thus frequently related to income, it becomes imperative in the study of disease conditions among any segment of the population to take into account the economic condition of the respective families composing it. In dealing with data previously collected, this rarely can be accomplished, owing to the fact that existing records of sickness almost never give any accurate information concerning the income status of the patients. Therefore, until such records are prepared, attempts to discover the factors giving rise to or affecting illness will in many instances be foredoomed to failure. Without such information, for example, it is impossible to decide whether a high sickness rate from any specific disease among a certain class of workers is due to injurious effects of their occupation or to their unsatisfactory living conditions at home. A reasonably accurate determination of the income status of such workers is, then, an essential prerequisite to any study of the supposedly deleterious effect of some specific condition affecting the persons in a given trade. Mere rough guesses concerning the economic conditions of various workers are unsatisfactory. Rather than proceed to record estimates of this nature or collect meaningless or (what is worse) misleading data relating to economic status, it is far preferable to omit these estimates entirely from consideration and to confess the omission.

To ascertain the income of the ordinary family with a reasonable degree of accuracy is entirely feasible, provided that the field agent is equipped with a correctly constructed questionnaire and is himself well trained in its use, and provided also that he can secure the cooperation of some responsible member of the family and has sufficient time for careful questioning. Experience has shown that, with an adequate appropriation, the other possible difficulties offer no real obstacles to the collection of data from which the family income for a given period may be computed with a satisfactory degree of accuracy.

II. Various Methods Heretofore Used in Classifying Families According to Income.

Upon the assumption, therefore, that the amount of family income for a specified unit of time (year, month, week) has been ascertained, it is the purpose of this paper to suggest a method by which families can be classified and compared upon this basis.

In economic studies and investigations, several methods of classification have long been employed. The usual method is to classify families on the basis of total income into such groups as "less than

$500," "$500 to $699," "$700 to $899," etc., per annum. Only where the range of income among a population is large and the population is well distributed throughout the range can such a classification lead to even moderately accurate comparisons. This is true because families with very similar total incomes may differ decidedly in—

(1) Size (the number of persons dependent upon family income) and

(2) Composition, with respect to the—

(*a*) Sex, and

(*b*) Age

of their members. Manifestly the Clark family with an annual income of $1,800 and consisting of only Clark and his wife ought not to be put into the same income class as the Smith family, which, although it also has an annual income of $1,800, is composed of Smith, his wife, and five dependent children. The chances are quite considerable that if either family must make sacrifices in diet or clothes or live in an insanitary house or an undesirable community environment, it will be the Smiths and not the Clarks.

A second method is to divide total family income for each family by the number of persons in the family and to obtain thereby the *per capita* family income. The objection to this is that while it takes into account the *size* of the family, it leaves out of consideration differences among families as to the *sex* and *age* of their members. The children in the Smith family may be youngsters under 12 years of age, while Brown, with the same number of persons in his family, may have to support a mother-in-law, a son in high school, and a daughter receiving callers, besides two young children. In spite of what a specific Mrs. Brown may do in the way of careful management, the Browns as a class are apt to suffer in comparison with the Smiths or the Clarks, even though all receive the same total income.

A third method which has been employed in at least one important economic investigation in the United States is to select for study only those families which are exactly alike or quite similar in size and composition.[3] While this method partially eliminates the necessity of considering differences among families arising from size, or from sex and age composition, it seriously limits the number of families available for comparison and study, and thus increases materially the task of collecting an amount of data sufficient to

[3] Edward Ducpetiaux, a pioneer in the collection of family budgets, proposed (1855) to select only those families which consisted of father, mother, and 4 children, aged, respectively, 16, 12, 6, and 2 (Budgets Economiques des Classes Ouvrières en Belgique, Bulletin de la Commission Centrale de la Statistique; Vol. VI). The United States Bureau of Labor, under the Commissionership of Carroll D. Wright, in its extensive cost of living study in 1901, used a "normal" family as a basis for comparison, defining such a family as one consisting of father, mother, and not over 5 children, who should be under 14 years of age and no other members (Twenty-third Annual Report of the Commissioner of Labor, 1903). In this study 25,440 families were included; but only 11,156, or less than half, came within Wright's definition of a "normal" family.

give statistical regularity. Furthermore, in studies of disease incidence or prevalence, this method is rarely practicable, for the reason that a fundamental desideratum is the collection of data relating to persons both affected and not affected by the disease, regardless of the size or other characteristics of the family. Frequently, also, it is necessary to include in one's survey an entire community, or at least numerous specific "samples" of the population of a community. Under such conditions manifestly it is impossible to pick families of a certain size and of a specified sex and age composition.

III. The Income-Per-Unit Method.

A fourth method is one which the writers here present, after developing it for use in connection with the part of the pellagra investigations of 1917 dealing with the relation of the disease to economic conditions in textile communities of South Carolina.[4]

Briefly stated, this method is to reduce to some common denominator, or unit, persons of either sex and any age so that families of different size and sex and age composition can be expressed as a number. Thus if an adult male of a given age = 1.0 unit, and adult female of a given age = 0.8 of a unit, a boy aged 10 = 0.5 of a unit, a family consisting of these individuals could be expressed as the sum of the units, or 2.3. The next step is to divide the amount of family income by the number of units in the family. If one family had a monthly income of $120, its monthly income per unit would be $\frac{\$120}{2.3} =$ $52.17. Any family or group of families for which the total income and the sex and age of each individual member are known may be dealt with similarly.

The principle of the method is simple and the general concept is, of course, not new.[5] If, however, the method is to yield dependable

[4] See Goldberger, J., Wheeler, G. A., and Sydenstricker, E., A Study of the Relation of Family Income and Other Economic Factors to Pellagra Incidence in Seven Cotton-Mill Villages of South Carolina in 1916: Public Health Reports, Washington, D. C., Nov. 12, 1920, pp. 2673-2714, Reprint No. 621.

[5] Prior to its application in studies of pellagra (see Sydenstricker, E., Wheeler, G. A., and Goldberger, J., Disabling Sickness Among the Population of Seven Cotton-Mill Villages of South Carolina in Relation to Family Income: Public Health Reports, Nov. 22, 1918) its use had been confined to dietary comparisons. As early as 1795 the Rev. David Davies, an English writer on conditions of labor, mentioned a scale of this kind which had been proposed by Foley for food requirements of persons of different ages. The method, so far as applied to evaluating food requirements, was elaborated by Atwater in the United States in the form of a scale of energy requirements, the first published suggestion of such a scale by Atwater being in 1892 in the Annual Report (1891) of the Connecticut Agricultural Experiment Station. This scale, based not solely upon the budgetary records of individuals, but also upon calorimeter studies, with later modifications, was used in various dietary studies of the United States Department of Agriculture, with which Atwater later became connected. About the same time Engel, in Europe, elaborated the method in a different manner. Engel, in 1895, took as the basis for comparing persons of different sex and age the weight per centimeter of height, and, using the average for a large number of persons, proposed that the food requirements of a child in its first year be considered a unit or "quet" (so named after Quetelet), and that for each additional year of age up to 25 there be an increased requirement of one-tenth of a quet (Lebenskosten Belgischer Arbeiterfamilien, Bulletin de l'Institute Internationale de Statistique, IX). Other students have employed variations of Atwater's and Engel's method, as, for example, Rowntree in his classic study of poverty (Rowntree, F. Seebohm, Poverty, A Study of Town Life, Chapter VIII, 1901). Atwater's plan of expressing food requirements of persons of different sex and age in terms of the requirements of adult males rather than in those of a child has become universal.

income classifications, the choice of a basis for classification is of fundamental importance, the unit chosen must be definite, and, above all, the scales must be reasonably accurate.

In the analysis of the incidence of disabling sickness and of pellagra in relation to family income in certain textile communities in South Carolina in 1916 it was found that the usual methods of classifying families according to income were too inaccurate. All of the families under consideration were families of mill operatives and thus received wages which fell within a relatively narrow range. Casual observations would lead to placing them all in one income class. A more refined basis for classifying them was necessary if the rather wide differences in income which actually existed within this group of families were to be revealed. In the absence of a better common denominator, the Atwater scale of food requirements was used in the analysis of the 1916 data.[6]

Comparison of the relative variations, according to age, of estimated individual expenses for all purposes among members of southern cotton-mill workers' families (U. S. Bureau of Labor, 1911) with that for food requirements (Atwater).

Age in years.	Male.		Female	
	Individual expenses (U. S. Bureau of Labor).	Food requirements (Atwater).	Individual expenses (U. S. Bureau of Labor).	Food requirements (Atwater).
Adult (over 16)	100	100	89	80
15-16	85	90	79	80
13-14	72	80	67	70
12	61	70	57	60
10-11	56	60	59	60
6-9	45	50	46	50
2-5	34	40	35	40
Under 2	26	30	26	30

NOTE.—The individual expenses estimated were for food (estimated by the U. S. Bureau of Labor according to the Atwater scale), clothing, medical attendance and medicines, insurance, amusements, tobacco, and school books (Report on Condition of Women and Child Wage-Earners in the United States, Vol. XVI; Family Budgets of Typical Cotton-Mill Workers, by Wood F. Worcester and Daisy Worthington Worcester, 1911, p. 150).

The basis thus suggested was employed by Prof. Ogburn in an analysis of cost of living data in the District of Columbia, which was collected by the Bureau of Labor Statistics, U. S. Department of Labor (Ogburn, William F., Analysis of the Standard of Living in the District of Columbia in 1916: Quarterly Publication of the American Statistical Association, XVII, 385, June, 1919).

[6] The use of this method has been described in a previous publication (Sydenstricker, Edgar, Wheeler, G. A., and Goldberger, Joseph, Disabling Sickness Among the Population of Seven Cotton-Mill Villages of South Carolina in Relation to Family Income: Public Health Reports, Nov. 21, 1918). As pointed out in this publication, the assumption in the use of this scale was that the expenditures for individuals varied according to sex and age in the same proportion as their food requirements. The assumption was by no means as accurate as could be desired; in its favor, however, it was said that since family expenditures in the great majority of cases in the population studied equaled total family income, and since food expenditures were nearly half (among poorer families considerably more than half) of total expenditures, a scale based even on food requirements alone was obviously very much more accurate than one omitting any consideration whatsoever of the number, sex, and age of individuals composing the families to be compared with respect to income. Before using the Atwater scale for this purpose, several published estimates of the cost of maintenance for individuals of various ages were examined. These estimates were based, in several instances, upon the results of investigations of actual expenditures of individual members of families. Using the estimated expenditures for an adult male as 100, the estimates for individuals of other ages of either sex was expressed relatively and compared with the Atwater scale. It appeared that, in most instances, the scales were fairly similar. The table here presented, computed from probably the most pertinent data available, indicated the relative cost of maintenance (at "a fair standard of living") for a year of individuals of various ages as estimated for southern cotton-mill workers by the United States Bureau of Labor in 1911, in comparison with the Atwater scale for the food requirements of individuals engaged in moderate muscular work.

Although it was not felt that any significant degree of error was involved in the use of the Atwater scale for this purpose, it seemed desirable to utilize a basis which would be more inclusive of the economic needs of the individual than the need for food alone. Accordingly, it was determined to use as the basis for classifying families a unit which would express as far as possible the relative differences in *all economic wants* among persons of different sexes and ages.

With this purpose in view, plans were made in 1916 to collect during the following year from a sufficient number of representative families such data as would show, with a reasonable degree of accuracy, the true relationship existing between total expenses incurred for all purposes for persons of various ages and both sexes. It was felt that correct ratios of this sort would certainly increase the possibility of measuring accurately the relative well-being of the families dealt with in the more extensive pellagra studies of 1917, especially since the difference between their respective incomes and expenditures was rarely considerable. In 1917 this study was made. While it was a necessary part of the investigations of pellagra, the results of this incidental study, as well as of certain statistical analyses of data collected in 1916 and 1917 from the point of view of food requirements of persons of different sex and age, will, it is believed, prove helpful not only for this specific purpose, but also as aids in future investigations in which family income is a factor of some importance.

These results are presented in the following pages. In analyzing the data the problem was found to consist of two parts: First, the derivation of correct curves showing food expenditures, and, second, the obtaining of similar curves for other expenditures. The reason that this division of the problem was necessary lay in the fact that the food used, including that purchased and that produced at home, was recorded only for the family as a whole, and it was entirely impracticable to secure separate records for individuals. On the other hand, expenditures for such articles as clothing, medical care, tobacco, amusement, etc., might actually be estimated for the different individuals in the family.

1. DIFFERENCES IN EXPENDITURES FOR FOOD AMONG PERSONS OF DIFFERENT SEXES AND VARIOUS AGES—THE "FAMMAIN" SCALE.

The first step undertaken was to test out the 1916 apportionment of food according to the Atwater scale to see whether this apportionment corresponded with the actual values of food purchased. The 1916 study was preliminary in its nature, and home-produced food had not been evaluated therein. As a result, the comparison was actually one of the money value of purchased food with food requirements in calories. The result of the test was to show a reasonably close correspondence of the Atwater scale with the relative food pur-

chases except in one respect—the Atwater scale rated all adults on the same basis, while the 1916 budgets indicated that purchases of food made for adults above the age of 35 were materially smaller than those made for adults from 19 to 35 years of age. Although it was suspected that this divergence was due to incompleteness in the Atwater scale, the fact was kept in mind that there might really exist a difference between food needs in calories and money values of food purchased, for it should be remembered that the new scale was so constructed as to represent a distinctly different concept from that of the Atwater scale. Money value was substituted for calories, and the actual supply obtained for consumption was used in place of the amount which the system requires for adequate nourishment.

Moreover, it is well to keep in mind the fact that the new scale is designed to portray *demands* for food rather than *actual purchases* thereof. Purchases are made for varying groups of individuals at irregular intervals. Demand is fairly constant. The concept of demand, however, is so largely psychological that it can only be measured indirectly. We can easily measure the value of food actually purchased or raised for consumption, and the average value for a considerable number of families doubtless varies proportionately to demand. The variations for different ages and sexes in the *value* of food are likewise persumably about the same as the variations in the *demand* for food; hence the relative curve representing the value of home produced food plus purchases can, without much probability of serious error, be also used as representing the relative food demand according to sex and age.

There being such a wide departure from the original meaning, it seems undesirable to adapt the term "adult male unit" to the new concept, since that term is already identified with a perfectly specific idea. It therefore appears advisable to coin a new term, inasmuch as no existing word seems to cover the idea at all accurately. The unit has accordingly been called a *fammain*, the word being a rough abbreviation of *food expense for adult male maintenance*. The *fammain* may be defined for any given class of people as a *demand for food of a money value equal to that demanded by the average male in the given class at the age when the expense for his food reaches a maximum*,[7] or, more briefly, the unit of food expense for adult male maintenance.

It was felt that the 1916 *fammain* scale might be materially inaccurate inasmuch as it was based upon budgets derived from only about 500 families and the number of persons in the higher age classes was quite limited. It was therefore determined to apply this scale to the larger mass of data collected in 1917. If accurate, the food

[7] The scales here presented were derived from a study of men and women engaged in what is assumed to be moderate muscular work. In an industry in which the men only are engaged in heavy work the ratios for women and children would be reduced somewhat from those here given.

expense per *fammain* evidently ought to show no tendency to vary, whatever the age or sex composition of the family. Without describing at length the rather detailed statistical processes necessary,[8] it may be stated briefly that variations in family income were first eliminated by dividing the families roughly into classes of somewhat

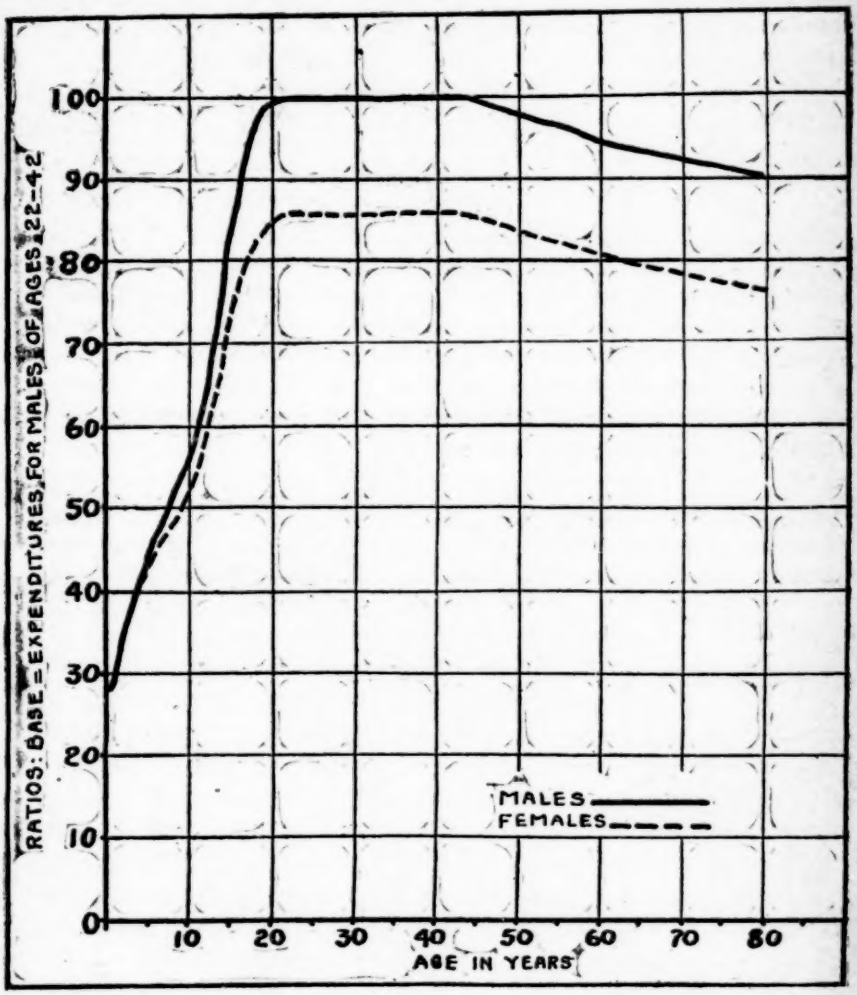

FIG. 1.—Relative cost of food for persons of each sex and of different ages, as determined from records of food supplies for 1,500 families in South Carolina textile-mill villages in 1916 and 1917. (See Table I: Table of *fammains*.)

similar income. Each income class was dealt with separately. The results of the test when applied to about 1,000 families showed that the 1916 study had rated females very slightly too low and that the older people had been rated materially too low. Necessary adjustments were made for these errors and new scales derived. In order

[8] These processes will be described in greater detail in another paper.

to make sure that the adjustments, which were somewhat intricate, had accomplished the purpose intended, the number of *fammains* according to the adjusted scales was computed for each family. Again the test was made to see whether the average expense per *fammain* showed a tendency to increase or diminish as the age and sex composition of the family changed. Budgets from about 1,500 families were used in this verifying process. It was found that the ratio of food expenditures of females to males had been determined as accurately as the data permitted. A slight additional upward adjustment was necessary in the case of persons over 34 years of age. By use of these finally adjusted scales the number of *fammains* in each family was again computed and applied as before to a somewhat different set of families at a different season of the year. No adjustments proved necessary in this instance. It is believed, therefore, that the scale as herewith presented (Table I, Figure 1) represents with a fair degree of accuracy the normal relative expenditures for food of persons of different sexes and ages in certain typical cotton-mill villages of South Carolina in 1916 and 1917, the adults generally being engaged in what may be described as "moderate muscular work," though in some cases the activity might be less than that phrase would imply.

TABLE I.—*Table of fammains—relative cost of food for persons of different sexes and ages as determined from records of food supplies for 1,500 families in South Carolina textile villages in 1916 and 1917.*

[Base: Males, ages 21 to 44.]

Age in years.	Male.	Female.	Age in years.	Male.	Female.
Under 1	$0.28	$0.27	41	$1.00	$0.86
1	.30	.29	42	1.00	.86
2	.35	.34	43	1.00	.86
3	.38	.37	44	1.00	.85
4	.40	.40	45	.99	.85
5	.44	.43	46	.99	.85
6	.46	.45	47	.99	.85
7	.48	.46	48	.99	.84
8	.51	.48	49	.98	.84
9	.53	.49	50	.98	.84
10	.56	.52	51	.98	.83
11	.59	.54	52	.97	.83
12	.64	.58	53	.97	.83
13	.69	.62	54	.97	.82
14	.77	.66	55	.96	.82
15	.84	.72	56	.96	.82
16	.90	.76	57	.96	.82
17	.94	.80	58	.95	.81
18	.97	.82	59	.95	.81
19	.98	.84	60	.95	.81
20	.99	.85	61	.94	.80
21	1.00	.85	62	.94	.80
22	1.00	.86	63	.94	.80
23	1.00	.86	64	.94	.79
24	1.00	.86	65	.93	.79
25	1.00	.86	66	.93	.79
26	1.00	.86	67	.93	.79
27	1.00	.86	68	.93	.79
28	1.00	.86	69	.93	.78
29	1.00	.86	70	.92	.78
30	1.00	.86	71	.92	.78
31	1.00	.86	72	.92	.78
32	1.00	.86	73	.92	.78
33	1.00	.86	74	.92	.78
34	1.00	.86	75	.91	.77
35	1.00	.86	76	.91	.77
36	1.00	.86	77	.91	.77
37	1.00	.86	78	.91	.77
38	1.00	.86	79	.91	.77
39	1.00	.86	80	.90	.77
40	1.00	.86			

The Atwater scale deals with consumption in *calories*, while the scale just described represents *money value* of the food supply. Unless it should prove true that for a certain sex and age the cost of one calorie is, on the average, greater than that for persons of different sex and age, it necessarily follows that differences between the Atwater and the *fammain* scales can not be attributed to differences in the units used in their formation. In order to determine the facts in this regard, families were divided into classes according to the average sex and age of their members, and the cost of food per calorie was computed for each class. It was found to show no distinct tendency to vary in any way. We must conclude, therefore, that the *fammain* scales are equally serviceable to show either the relative money cost of the food supply or the relative calories contained in the food supply for each age in both sexes.[9]

Presumably, whether measured in terms of calories or of cost, the quantity of food actually consumed by members of any given income class tends to vary within that class principally in proportion to the basal requirements of the members (under given conditions of muscular exertion). It is quite possible, in fact, probable, that other conditions may be present and cause divergencies from the basal requirements curve. The striking similarity, however, of the Atwater and *fammain* scales for those ages for which they are comparable suggests that such slight divergencies as are actually shown are due rather to methods of computation than to any real differences in the facts which they are intended to set forth.

This scale of *fammains* having been thus computed, it is now possible to make a logical comparison of the relative requirements for food expense for the members of different dietary groups, a dietary group being defined as those persons ordinarily eating from a common food supply. Each member of the dietary group is rated at his or her particular fraction of a *fammain*. These fractions are added to give the number of *fammains* in the dietary group. The total cost of food for the dietary group is then divided by the number of *fammains* in the group in order to obtain the expense for food per *fammain*. A comparison of these relative expenses per *fammain* for food gives, from the standpoint of cost, a fairly accurate picture of abundance or scarcity of food supply in the families under consideration.

2. DIFFERENCES IN EXPENDITURES FOR ALL PURPOSES AMONG PERSONS OF DIFFERENT SEXES AND AGES—THE "AMMAIN" SCALE.

But food expense is evidently only an important fraction of the family budget and is, when taken by itself, an insufficient basis for an accurate classification of a family in the scale of economic well-

[9] It is intended to consider this point more at length in a later paper.

being. It is, therefore, necessary in planning any such comparison to consider expenditures not only for food, but for other articles as well. Next to food, clothing is the really heavy expense among the cotton-mill families. It is, of course, bought for the use of individual persons. Similarly, tobacco, soft drinks, entertainment, etc., are individual expenses. It was determined, therefore, to obtain for the preceding 12 months, estimates from various housewives in the villages as to the entire family budget, except food supply (which already had been accounted for), and to apportion to the individuals using them as large a fraction as possible of the items obtained by the family.[10]

Following this plan detailed statements of expenditures for the preceding 12 months were obtained in 1917 from some 300 families.

TABLE II.—*Relative expenditures for persons of different sexes and ages for articles purchased for individual use, as shown by budgets of 140 families in South Carolina textile villages in 1916 and 1917.*

(Base: Males, ages 24–25.)

Age in years.	Male.	Female.	Age in years.	Male.	Female.
Under 1	0.11	0.11	41	0.80	0.44
1	.13	.13	42	.79	.43
2	.16	.16	43	.79	.41
3	.17	.17	44	.78	.40
4	.19	.18	45	.78	.38
5	.20	.19	46	.77	.37
6	.22	.21	47	.76	.36
7	.24	.23	48	.76	.35
8	.26	.25	49	.75	.35
9	.28	.27	50	.74	.34
10	.31	.30	51	.73	.33
11	.33	.33	52	.71	.33
12	.35	.37	53	.69	.32
13	.40	.40	54	.67	.32
14	.46	.44	55	.64	.31
15	.55	.48	56	.62	.30
16	.65	.57	57	.61	.30
17	.77	.60	58	.60	.29
18	.86	.61	59	.58	.29
19	.92	.63	60	.57	.28
20	.95	.63	61	.56	.28
21	.96	.63	62	.55	.27
22	.98	.62	63	.54	.27
23	.99	.62	64	.53	.27
24	1.00	.61	65	.52	.26
25	1.00	.60	66	.51	.26
26	.99	.60	67	.51	.26
27	.97	.59	68	.50	.26
28	.95	.59	69	.49	.26
29	.94	.58	70	.49	.26
30	.92	.58	71	.48	.26
31	.91	.57	72	.47	.25
32	.89	.55	73	.47	.25
33	.88	.54	74	.46	.25
34	.87	.52	75	.46	.25
35	.85	.50	76	.45	.25
36	.84	.49	77	.45	.25
37	.83	.48	78	.44	.25
38	.82	.47	79	.44	.25
39	.82	.46	80	.43	.25
40	.81	.45			

Food expenditures were calculated from records previously secured and were added in. Information concerning the family income was already at hand. Total reported income and expenditures were

[10] Since rent was in most cases a very small item of expense, the proportion of total expenditures for the entire family which went for individual purposes, including food, was very large—over 90 per cent.

therefore compared for each family. When the two failed to check within 15 per cent, the error was considered so large as to render the schedule worthless and it was rejected. One hundred and forty schedules, representing 672 individuals, were retained, most of these having errors under 8 per cent. All apportionable expendi-

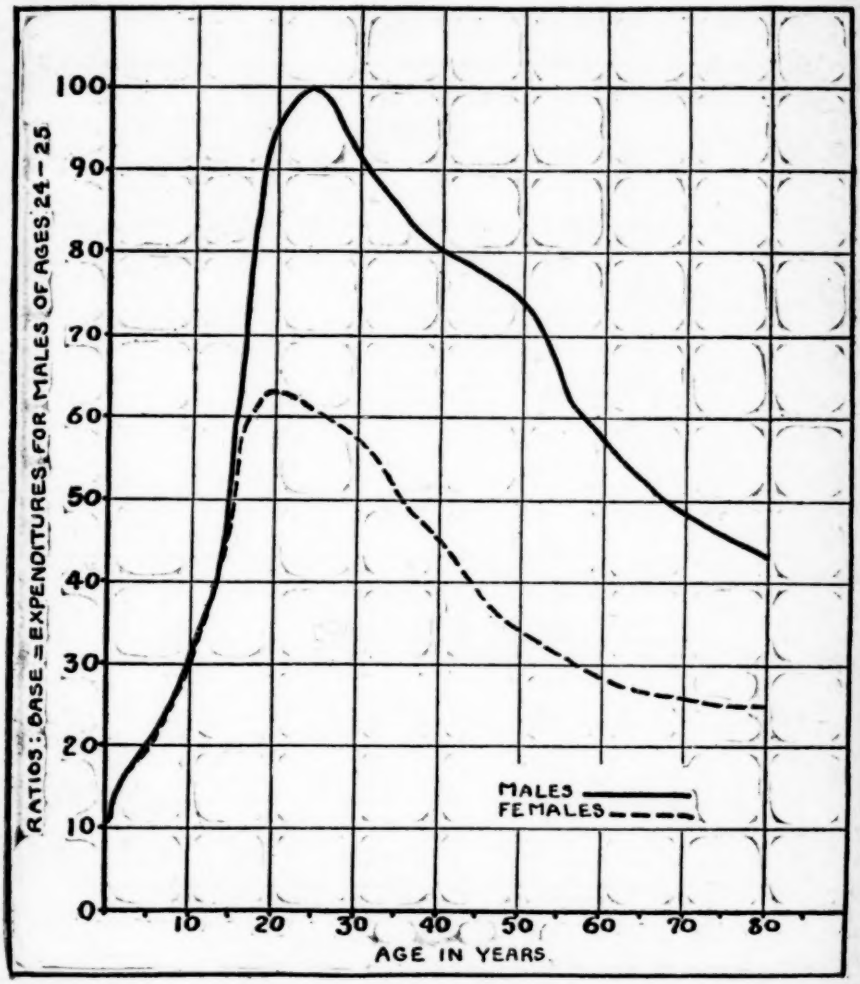

FIG. 2.—Relative expenditures for persons of each sex and of different ages, for articles purchased for individual use, as shown by budgets of 140 families in South Carolina textile mill villages in 1916 and 1917. (See Table II.)

tures for each individual were then compared with his or her sex and age, averages were computed, and a curve was derived for each sex. These curves were smoothed and the indices derived therefrom were combined with those of the corresponding *fammain* scale, weights being applied in proportion to the actual expenditures for food as compared to the other purposes considered. The combined

scales are intended to represent approximately the *relative demands* in terms of money value for food, clothing, and miscellaneous individual requirements, all combined. Expenses incurred for these articles together constitute about 89 per cent of the total family expenditures,

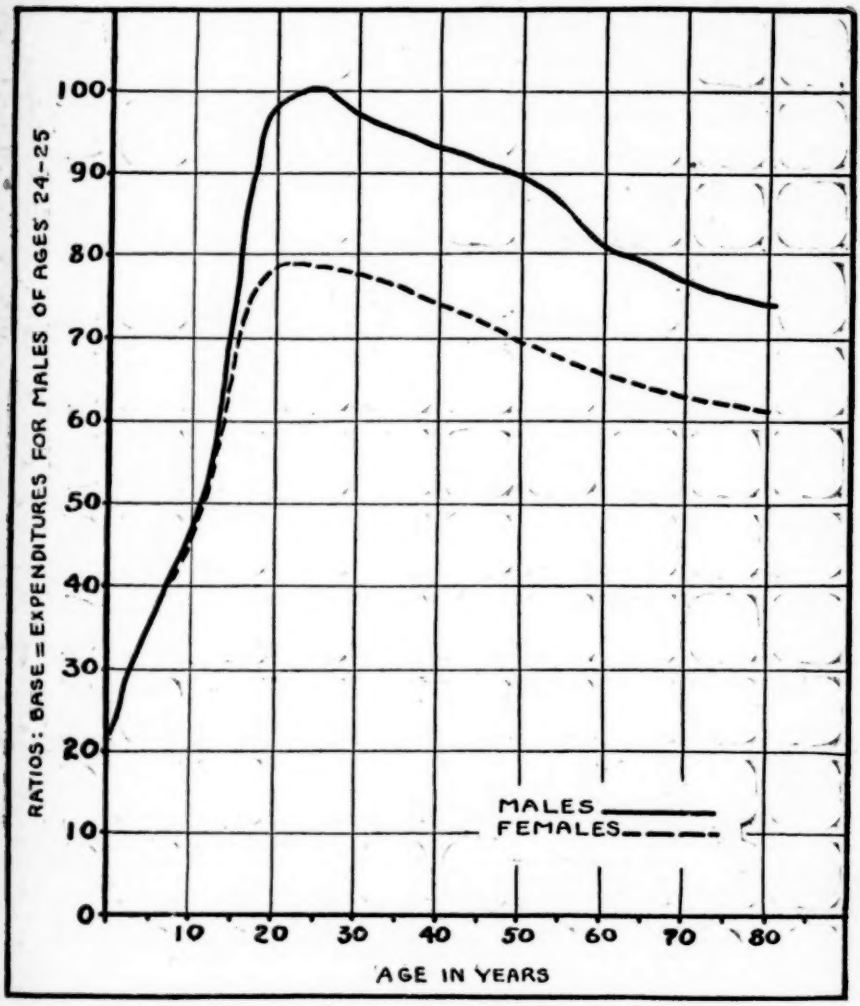

FIG. 3.—Relative expenditures for persons of each sex and of different ages, for food and articles purchased for individual use, as shown by records of food supplies and budgets of families in South Carolina textile-mill villages in 1916 and 1917. (See Table III: Table of *ammians.*)

hence it seems certain that the scale is fairly representative of all expenses for the families considered.

This scale is evidently based upon a unit similar to that of the *fammain*, differing therefrom only in that it includes also a number of other important items instead of food alone. It may be denominated as *ammain* (this being an abbreviation for total expense for

adult male maintenance) and defined, for any given class of people, as *a gross demand for articles of consumption having a total money value equal to that demanded by the average male in the given class at the age when his total requirements for expense of maintenance reach a maximum*, or, more briefly, the unit of total expense for adult male maintenance.

Table II and Figure 2 show the variations in expenditures for persons of different sexes and ages for articles purchased for individual use, as determined from the budgets of 140 families. Table III and Figure 3 present the final *ammain* scale for both sexes, showing the variations in the expense of maintenance (including food as well as articles purchased for individual use). A condensed table of *ammains* (Table IV) is suggested for use where refined classifications are unnecessary or impracticable.

TABLE III.—*Table of ammains—Relative expenditures for persons of different sexes and ages for food and articles purchased for individual use as shown by budgets of families in South Carolina textile villages in 1916–17.*

[Base: Males, ages 23 to 26.]

Age in years.	Male.	Female.	Age in years.	Male.	Female.
Under 1	0.22	0.22	41	0.93	0.74
1	.24	.24	42	.93	.73
2	.28	.28	43	.92	.73
3	.31	.31	44	.92	.72
4	.33	.33	45	.92	.72
5	.35	.35	46	.91	.71
6	.38	.38	47	.91	.71
7	.40	.40	48	.90	.70
8	.42	.41	49	.90	.70
9	.44	.43	50	.89	.69
10	.47	.45	51	.89	.69
11	.50	.48	52	.88	.69
12	.54	.51	53	.87	.68
13	.59	.55	54	.86	.68
14	.66	.60	55	.85	.67
15	.74	.65	56	.84	.67
16	.81	.71	57	.83	.67
17	.88	.74	58	.83	.66
18	.93	.76	59	.82	.66
19	.96	.78	60	.81	.66
20	.98	.78	61	.81	.65
21	.99	.79	62	.80	.65
22	.99	.79	63	.80	.65
23	1.00	.79	64	.79	.65
24	1.00	.79	65	.79	.64
25	1.00	.79	66	.78	.64
26	1.00	.78	67	.78	.64
27	.99	.78	68	.78	.63
28	.98	.78	69	.77	.63
29	.98	.78	70	.77	.63
30	.97	.78	71	.76	.63
31	.97	.77	72	.76	.63
32	.96	.77	73	.76	.63
33	.96	.77	74	.75	.62
34	.95	.76	75	.75	.62
35	.95	.76	76	.75	.62
36	.94	.76	77	.75	.62
37	.94	.75	78	.75	.62
38	.94	.75	79	.74	.62
39	.93	.74	80	.74	.62
40	.93	.74			

TABLE IV.—*Table of ammains for age groups based on Table III (suggested for use in less refined classifications of families according to income).*

Age group.	Male.	Age group.	Female.
Under 2	0.2	Under 2	0.2
2 to 4	.3	2 to 4	.3
5 to 9	.4	5 to 9	.4
10 to 12	.5	10 to 12	.5
13	.6	13 to 14	.6
14 to 15	.7	15 to 18	.7
16	.8	19 to 36	.8
17 to 18	.9	37 to 64	.7
19 to 35	1.0	65 and over	.6
36 to 55	.9		
56 to 75	.8		
75 and over	.7		

IV. Income Classification by the "Ammain" Method.

The application of this method is a matter of simple arithmetic, provided the data are at hand. For the sake of clearness its use is outlined below:

1. Data required:
   (*a*) Income of the family as a whole for a given period.[11]
   (*b*) Sex and age of each person subsisting from family income.
2. Procedure:
   (*a*) From the table of *ammains* (Table III) ascertain the fraction of an *ammain* for each person subsisting from family income.
   (*b*) Obtain the sum of these fractions—i. e., the number of *ammains* composing the family.
   (*c*) Then

$$\frac{\text{Family income}}{\text{Number of } \textit{ammains} \text{ in family}} = \text{Family income per } \textit{ammain}.$$

Illustration.

Family.	Monthly family income.	Sex and age of each individual member of family.		Equivalent in *ammains*. (See Table III.)	Monthly family income per *ammain*.
		Sex.	Age.		
Family A	$100	Male	25	1.00	$48.31
		Female	23	.79	
		Male	2	.28	
				2.07	
Family B	$100	Male	50	0.89	$33.11
		Female	45	.72	
		Male	16	.81	
		Female	14	.60	
				3.02	
Family C	$200	Male	60	0.81	$53.68
		....do	33	.96	
		Female	30	.78	
		....do	27	.78	
		Male	7	.40	
				3.73	
Three families as a group	$400			8.82	$45.35

[11] The accuracy of the data relating to income is, of course, fundamental. The *degree* of accuracy required naturally depends upon the desired exactness in comparing families or groups of families. It may be noted that, in calculating data as to family income, it is important to include income from *all* sources (wages of all wage-earning members not paying board, value of home-produced foods, receipts from boarders and lodgers, etc.), and to consider only *net* income as the basis for classification (i. e., after deducting cost of boarders and lodgers, cost of home-produced foods, etc.)

The foregoing illustration also serves to suggest the value of such a method as has been outlined. Comparing family A and family B with respect to income, it is seen that if the family income be taken as a basis, there is no difference indicated in their status, since each has an income of $100 per month. But, taking into account the differences in size and sex and age composition, family B is distinctly less well off than family A. Similarly, family C on the basis of family income has twice the income of either family A or family B. But taking into account the differences in size and sex and age composition, family C has but 62 per cent greater income than family B and only 11 per cent greater income than family A.

Groups of families can be compared in the same way by dividing the sum of the incomes for each group by the number of *ammains* in each group.

It is believed that the use of the above plan in the manner just illustrated presents a satisfactory method of classifying families according to income, thus providing for the essential prerequisite to accurate comparison and analysis from the point of view of economic status. In dealing with the population actually studied, we feel that the specific *ammain* scale herewith presented (Table III) may be applied to produce results of a rather high degree of accuracy.

It must not be assumed, however, that these particular scales are to be regarded, in any way, as the final word in this matter. They are only supposed to be fair approximations of conditions as they exist in South Carolina mill villages. It is highly probable that a study among other classes of people in other communities would produce somewhat different results. It should also be borne in mind that the scales here given were mainly derived from studies of incomes of families and may, perhaps, not fairly represent the situation of individuals living independently. Within such families the relative differences in expenditures for persons of different sexes and ages were found to be similar in groups of families with low and high incomes in the population studied. It is, however, quite possible that in a population having much higher incomes or widely different customs, marked dissimilarities might be found. In the mill villages, for example, women spend for clothing less than two-thirds as much as men. Presumably among the wealthy, this ratio might be reversed. Differences might be found, likewise, in other types of expenditure. In the case of food and many other staple articles, the *relative* expenditures probably are about the same for all classes. These staples dominate the budget for the great mass of the people; hence, for the vast majority of the population it is improbable that especially derived scales would differ widely from those representative of the cotton-mill villages.

It is, of course, desirable that similar scales be worked out for as many different sections of the population as possible; but, to most private investigators, the cost of collecting data for derivation of such scales is prohibitive. The belief is ventured that, in most cases, such a special study is not essential, as the scales here presented probably will not give rise to serious errors when applied to other sections of the population—especially to other wage-earning groups. It is practically certain that results derived by the use of these scales would, at least, be decidedly superior to those obtained by classifying families on the basis of net income for the family as a whole, without considering its size and composition, or even by figuring the net per capita income for each family.

ONE OR SEVERAL SPECIES OF MALARIA PARASITES?

A REVIEW OF RECENT WORK BEARING ON THIS QUESTION.

By Bruce Mayne, Biologist, United States Public Health Service.

The treatment of malarial fevers has been based partially on the classification of the types of the disease. The intelligent physician varies the specific treatment on the basis of microscopical findings and clinical symptoms. Therefore, the aid of the microscope must be sought in making a final decision. The differentiation of the various types of malaria plasmodia has been assumed by the clinician, the zoologist taking a subordinate part in the decision pertaining thereto. Possibly this may explain the confusion of the status of the parasitology of this disease. It is believed that the question whether the *Plasmodium* of malaria is a plural organism or a single polymorphic organism capable of causing one set of symptoms at one period and a different set of symptoms at another period in its life history is of more than academic interest. Assuming, then, that the problem is of sanitary importance, the matter is here given some consideration.

Although it has been generally accepted that the three species of *Plasmodium*, namely *P. vivax*, *P. falciparum*, and *P. malariæ* are distinct, the question of the complete transformation of the parasites of malaria has recently assumed much prominence in the literature of malariology. During the World War this question was given renewed interest through observations made on troops infected in the Balkans and subsequently repatriated. With the notable exception of the opinions of Laveran, the views upholding the unity of the species of *Plasmodium* were for the most part hastily constructed, and the recent additions to the literature give evidence of incomplete observations such as only war conditions could warrant.

Guided by the consensus of opinion of conservative workers in parasitology, it is safe to assume the following as the status of the

question under discussion: Assertions maintaining the unity of the malaria parasites and the transmutation of species can be accounted for by the presence of unrecognized cases of mixed infections.

The following references to the available literature give a historical survey bearing on the problem.

Laveran (1893), who is the strongest advocate of the unity of the malaria parasite, states:

"I arrived, in 1884, at the conclusion that the different forms in which the hæmatozoa of paludism present themselves belong to one and the same polymorphic parasite; since then I have always upheld this opinion.

"Is there but one hæmatozoon of paludism? Is there a single polymorphic parasite, or are there several species of parasites giving rise to different clinical manifestations of paludism?

"The theory of the plurality of the hæmatozoa of paludism raises numerous objections. The unity of paludism, from a clinical and anatomico-pathological point of view, is indisputable. Certain forms under certain conditions are oftener met with, e. g., the tertian and the quartan types are much more common in our climate than in hot countries; but it can not be said that here is a home of tertians, there a home of quartans and irregular fevers; it is in the same endemic centers that fevers of different types are contracted, and these types vary in a regular manner with the season and the climate.

"It is a well-known fact that the fever often changes its type in the same patient; it is rare, especially in hot countries, for a fever to begin with the tertian or quartan type; more generally it is first continued or quotidian, and at the time of a relapse it is transformed into a tertian or a quartan. The type of fever may even modify itself when patients have left the palustral countries under conditions which exclude the idea of a new infection. If these facts are to be explained on the hypothesis of the plurality of parasites, it will be necessary to admit that the different species of hæmatozoa must generally coexist in the same patient and are in turn predominant.

"The cresent-shaped bodies are, it is true, very characteristic, and were it proved that they are always present in the irregular fevers and never in the regular fevers, we might admit the two varieties described by Grassi and Feletti. But the relations which exist between the appearance of crescent-shaped bodies in the blood and this or that type of paludism are far from being so simple. The exceptions to the rule, if there be any rule, are very numerous."

Referring to the etiology of malarial fevers, Scheube (1902) remarks: "The fact also that in epidemics of malaria all forms of the disease occur, lends still more color to Laveran's opinion, whereas the results of experimental inoculatory transmissions favor the views of those who maintain the idea of different species."

Thiroux (1906) supports Laveran's view as to the unity of the malaria parasite. He examined native children in Senegal and found that in the hot weather tropical forms amounted to 98.5 per cent of the whole number examined, and large forms (benign tertian and quartan) to 1.5 per cent, whereas in November and December the respective figures of the positive cases were 73.5 and 26.4 per cent and in March and April they were 64.1 and 35.8 per cent of the positive cases. He considers it difficult to admit a summer and winter malaria due to absolutely different species.

Plehn (1907) records a case of tropical malaria acquired in Togoland which afterwards, in Germany, following treatment, became a double benign tertian. He thinks the probability that the patient had a latent benign tertian is negatived by the excessive rarity of such occurrence in the district from which he came. According to Plehn it would seem that a single species of malarial parasite is able to undergo variations according to the different countries and climates in which it develops.

Craig (1909) states: "Laveran and his followers believe that the parasite producing malarial fever is a polymorphic organism, assuming very great differences in morphology under differing conditions of environment, and that, in Laveran's words, 'there does exist a constant relation between the forms under which the hæmatozoa appear in the blood and the clinical manifestations of paludism; one can only say that certain forms of the parasite are more often seen in certain cases, the crescents, for instance, in relapses and malaria cachexia.' Some of Laveran's followers even claim to have observed interchangeability of the various species which have been described, but their observations still await confirmation and the great weight of evidence to-day, both morphological and experimental, is in favor of the existence of several species of malarial plasmodia."

Armand-Delille (1917) is impressed with the fact that among the French troops in Macedonia the predominant malarial infection between the beginning of July and the end of March following was *P. falciparum*, and the predominant infection from April to July was *P. vivax*. In October 95 per cent of all cases of malaria were *P. falciparum*. Beginning with April, 115 out of 116 blood examinations showed only *P. vivax*. Again, at the hospital for malarial patients at Vichy, at the end of June and the beginning of July, he could find only *P. vivax*. After the month of December *P. vivax* was completely substituted for *P. falciparum*. Even in patients who had had pernicious malaria, only parasites of benign tertian could be found.

"How is it," this author asks, "that the parasite usually so resistant to quinine disappears in the spring, giving place then to the parasite usually so sensitive to quinine? Is there a transformation

of *P. falciparum* into *P. vivax?* Is *P. falciparum* merely the form that persists in the internal organs? Is Laveran's theory of the unity of the malaria parasites correct?"

Teichmann (1917) treated 24 cases of tropical malaria for four to five months in a German military hospital in Turkey and found his cases harbored *P. vivax* at the end of the treatment. He states that recent infection was out of the question and rejects all of the usual explanations: inefficient prophylaxis, quinine-fast parasites, low resistance of the patients, and insufficient treatment.

Von Heinrich (1917) in a paper giving statistics of 1,029 cases treated during seven months at the malaria hospital, Sarajevo, records 150 mixed infections. These in most cases were not diagnosed until the latent benign tertian parasites appeared in the spring, which is their optimum period of development, just as autumn is the optimum period for the tropical parasite. He maintains that the two parasites can be coexistent; that each has its own characters; that no transitional forms were seen; therefore that there is no evidence that one changes into the other as has been supposed by Laveran and others. In recording the type of parasite the author emphasizes that dates should always be given.

Forschbach and Pyszkowski (1918) record a change of type of parasite in three out of seven cases of chronic subtertian malaria. In each case small rings and crescents were present at first and persisted during the winter, and then disappeared to be replaced by benign tertian parasites. The authors offer the following explanations: double infection, superinfection with benign tertian following the removal of cases from Macedonia to Breslau, and conversion of subtertian parasites into tertian.

Gros (1918), relative to the unity of the malaria parasites, offers conclusions based on hypothetical grounds, not on experimental research, as follows:

1. There is only one species of malaria parasite.
2. This species assumes different forms according to the climate, season, and the natural reaction of the host.
3. It is transmissible in each of its several forms, clinical and microscopical.

The author asserts that the simultaneous presence of two forms in the host's blood signifies not a mixed infection but the course of transformation of one form into another.

Verzar (1918) made observations on 2,662 patients infected during the autumn in Albania, Montenegro, and Serbia and brought to Hungary for treatment. Here, from November to February the relapses were chiefly subtertian, and beginning with March they were almost exclusively benign tertian. He made special studies on eight cases which originally harbored subtertian and afterwards tertian

parasites. These conditions were reversed in five other cases. The author made 12,978 examinations, noting the simultaneous appearance of both types of parasites only six times.

Worner (1919) cites some facts in favor of the distinctness of the tertian and subtertian parasites. It was observed that among the troops of which he was in charge the period of tertian infection lasted from the end of July to mid-October, and that of subtertian from mid-July to the beginning of December. Blood examinations in all cases were carefully made through three malarial seasons. His conclusions are as follows:

1. Many patients who suffered an attack of tertian in the spring had had in the previous year first tertian and then subtertian.

2. Many patients had had, clinically and microscopically, only subtertian. All of these men had been in the malaria region during the period when tertian predominated.

3. In the instance of the men who were removed into the district between October and early December and suffered from subtertian, tertian fever in the spring was never observed. The author concludes that the two types of parasites, *P. vivax* and *P. falciparum*, are quite distinct.

Seyfarth (1919), discussing the seasonal appearance of the types of malarial fever, concludes that the existence of three well defined species can not be denied, but that under certain conditions, principally climatic, the occurrence of type transitions is observed. As an argument against mixed infections, the author cites 220 cases of subtertian in which evidence of mixed infection was carefully sought in the autumn and winter but not found. However, in the following spring these relapsed with the presence of tertian parasites. When various provocative measures were applied to crescent carriers, tertian parasites were produced. Following this the crescents gradually disappeared. Seyfarth points to the isolated occurrence of cases of quartan and subtertian in places, for instance, in Germany, where tertian is the only form usually found.

Armand-Delille (1919) supports Laveran's belief that there is only one species of malaria *Plasmodium* and that alternation of parasites is a common occurrence. He thinks this alternation of parasites is to be explained in terms of the infecting anophelines. In other words, *P. vivax* is alone present at the beginning of epidemics, whereas *P. falciparum* appears in the blood at a time when reinoculations occur, and starting from the moment when the sporozoites are introduced in an almost continuous manner into the blood, the schizonts are very small and gametocytes assume the form of crescents, well known for their resistant powers. Further, the supposition is advanced that these forms of resistance and this aspect are the result of a modification of the blood serum, the repeated

inoculations of sporozoites favoring the production of antibodies which determine the production of resistant forms of the parasite. When anophelines disappear during the winter months or the patient, being in a healthy country, is no longer exposed to their bites, antibodies cease to be produced or are gradually eliminated, and the formation of crescents terminates. Instead, he concludes, the parasite perpetuates itself by schizogony and produces large spherical gametocytes capable of surviving over a long period, i. e., until the intermediate hosts start breeding out.

Eisner (1919), after several years' experience with malaria in Macedonia, rejects the theory that there is only one species of malarial parasite. He argues that cases of benign tertian occurring in persons who had suffered the previous summer from tropical malaria only, are readily explained when it is remembered that the former infection frequently remains latent for long periods. Quinine prophylaxis is able to keep benign tertian in subjection but often fails to suppress infection with *P. falciparum*. Hence in cases of double infection the latter is first in evidence while the former only appears at a later date. He notes that in Macedonia infection with tropical malaria was acquired late in the summer at a time when quinine prophylaxis had become slack and irregular, so that *P. falciparum* had a better chance of establishing itself than *P. vivax* infection, which occurred earlier at a time when the prophylaxis was carried out.

The author advances the hypothesis that a tropical infection may actually prevent the development of a benign tertian infection, but brings forward no argument in support of the suggestion. He states that the apparent change of type seen in the initial attack may also be observed in the relapses. Here, processes of immunity may play a part; but whatever the cause, the majority of benign tertian relapses occur in the spring, i. e., from March to May, whereas the tropical relapses, after appearing first in the autumn or throughout the winter, again show themselves in the beginning of summer. Hence, according to Eisner, it is easy to understand that the later benign tertian relapses of early summer may, in the same patient, be followed by recurrences of tropical malaria.

There are, however, other facts which the author advances to disprove the unitarian theory, as, for example, the morphological and histological differences in the parasites, the differences in the types of fever they produce, and numerous specific epidemiological and clinical features which distinguish benign tertian from tropical malaria.

Werner (1919) asserts that he does not believe in the unitarian theory of malaria parasitology. According to this writer the phenomena advanced in its favor may be explained in terms of the biological peculiarities of the mosquito vectors.

Plehn (1919) explains the change of type in malaria infection biologically as follows: "The mosquitoes become infected with large parasites (benign tertian) in spring from relapse cases or early primary cases in which the infection has persisted from the previous year. As soon as it is warm enough they transmit the infection to man, who shows the corresponding type of parasite. Later, under the action of summer heat, the parasites in the mosquito assume other characteristics, so that they acquire, in the first place, the property of destroying the red cells before there is time for the large forms to develop in the latter, and secondly, that of producing crescents. With these characteristics the parasites are transferred to man in the height of summer, and the mosquitoes newly infected by him cause the summer epidemic with small parasites. The mosquitoes infected in the summer are presumed to die in late autumn. During the following months the infection in man weakens, probably under the action of the winter climate, which is not favorable to the parasites. In the later relapses, in many cases, the large parasites with rosettes and spherical gametocytes reappear, provided the infection has not been stamped out. These later relapses, with large parasites, furnish the material for the next year, thus restarting the cycle.

"In northern Europe small forms and crescents are usually not seen, because the temperature is too low to allow them to develop in the mosquitoes. Where the new human infections in the North cease at the height of the summer, we may perhaps assume that the temperature during the year in question was not suitable for the development of the sporozoite broods even of the larger forms. It is easy to explain the exclusive occurrence of the small parasites in tropical equatorial countries by the uniformly high temperature at which the mosquitoes live throughout the year. When, however, in the case of relapse after home leave and residence in a cool country or after the infection is weakened through treatment, the large parasites appear even at the equator, one can no longer deny an action on the part of the human organism. How this takes place is not yet clear."

Reitler (1919) records his observations made in a hospital for malaria in Vienna, where 211 patients were held under close observation for a sufficiently long period under conditions such that risk of reinfection could be excluded. He states that in malignant tertian cases there was a rapid fall from a maximum of positive blood findings in January to a minimum in February, with thereafter a slight rise in April. In benign tertian infections the period of greatest freedom from parasites was in February, and the number of positive blood examinations rose steadily until May, in accordance with the well-known fact that benign tertian relapses are chiefly

seen in the spring. Mixed cases showed an almost constant fall in the number of tropical parasites as contrasted with a constant rise in the number of *P. vivax* infections, the maximum of mixed findings being in March and April. Here again the chief parasite-free period was February.

Reitler states: "This alteration in the parasites seen in the same patient is modified by (1) the provocative influence of high external temperature and strong light, these factors affecting equally both species of parasite; (2) treatment with quinine, *P. vivax* being more susceptible than *P. falciparum*. There are, however, exceptions to the general rule not easily explained. Contrasting the behavior of tropical and tertian parasites in cases of mixed infection, it is seen that temperature and light are not only the factors concerned. The view that tropical infections are less susceptible to these agencies than are benign tertian cases or may even react to them in a different manner is negatived by their well-known behavior during the tropical season and by the changes observed by Plehn who, in patients showing only quotidian infections (*P. immaculatum*) in the tropics, found a change of type to *P. vivax* when these patients had returned to Germany. The respective geographical distribution of both species of parasites is also against the hypothesis."

Simons (1919) devotes a portion of his paper to a careful criticism of the unitarian theory. He opposes the hypothesis both on theoretical grounds and from a consideration of the cultural studies. Further, he deals with the question of the influence of temperature on the malarial parasite, a point on which those who hold the unitarian theory lay stress, and cites the work of Sacharoff, who fed a leech on blood containing *P. falciparum*, kept it on ice for four days, injected the blood into himself intravenously, and suffered from a tropical pernicious attack. Simons does not regard this experiment as conclusive evidence, but advances it as an argument against the view that variations in temperature can exercise a profound influence on the form of the *Plasmodium*. He also points out that the unitarian theory, which is concerned with a morphological question, depends chiefly on epidemiological and clinical proofs, not on morphological findings. The evidence he obtained from mixed infections is against the unitarian theory, and he states that in such cases faulty staining techique may lead to fallacious conclusions. In this connection the author recalls his work with trypanosomes and with malaria parasites, more especially crescents, and indicates errors which may arise owing to the inadequate staining when Giemsa's method is employed for thick drop preparations.

Recent Experience of the Writer.

Relative to the explanation offered by several workers that the alternation of parasites can be interpreted in terms of the infecting

anophelines, the following account of the writer's experience is submitted. At the outset it is necessary to remind the supporter of the belief in unity of species of plasmodia that if one carefully analyzes the accounts in the literature of approximately 100 mosquito inoculation experiments an incontrovertible fact presents itself. In every instance of positive result the type of parasite imbibed with the blood of the donor was always reproduced with regularity in the volunteer host. One is not prepared to discuss the proportion of cases cited which were mixed infections, as no mention is made of this condition. In this connection it is believed that if suitable mixed infections could be utilized for mosquito infectivity experiments, much could be definitely determined relative to possible change of form in the transference of parasites. A more critical test would thus be established, affording a desirable criterion as to the possibility of reproducing corresponding forms of the parasite from carrier to new host.

In the positive inoculation experiments performed in the Public Health Service malaria laboratory located at Memphis, Tenn., the evidence presented has been uniformly confirmatory of the idea of constancy of species. Sixteen positive experiments are recorded, 2 of them with subtertian malaria and 14 with tertian malaria. The data relative to the reproduction of *P. falciparum* are given herewith.

The blood donor used for the infection of the specimen of *A. quadrimaculatus* was submitted to daily blood examination before and during mosquito biting, showing gametocytes of *P. falciparum* in his blood as tabulated.

TABLE I.—*Per cent of subtertian gametocytes in 200–400-leucocyte counts.*

Date of experiment.	Per cent of gametocytes.	Date of experiment.	Per cent of gametocytes.
September:		September—Continued.	
1	16	12	18
2	33	13	29
3	16	14	15
4	48	15	3
5	69	16	4
6	33	17	5
7	30	18	3
8	28	19	2
9	24	20	2
10	17	21	3
11	9		

The patient's blood was carefully noted for forms other than crescents, and only an occasional *falciparum* ring was ever seen in the 21 blood examinations.

The mosquito used in this test was applied to a healthy host 15 days following its last infective blood meal. A sharp attack

of subtertian malarial fever followed an incubation period of 11 days, when characteristic ring forms of *P. falciparum* were found in the peripheral blood. Treatment was deferred for three days, during which time the diagnosis was amply substantiated clinically and microscopically. Numerous blood examinations failed to reveal forms other than those typical of subtertian malarial fever, and these were indistinguishable from the young schizonts of *P. falciparum* harbored by the original patient selected to infect the mosquito.

In the second inoculation experiment with subtertian malaria, the blood donor used to infect the specimen of *A. quadrimaculatus* was a typical chronic case of the disease. The blood findings during mosquito biting are noted as follows:

TABLE II.—*Per cent of gametocytes in 300-leucocyte counts.*

Day of experiment.	Per cent of gametocytes.	Day of experiment.	Per cent of gametocytes.
August:		August—Continued.	
1	7	6	8
2	10	7	4
3	15	8	2
4	8	9	5
5	5		

In addition to the presence of crescents in the patient's blood, there were several days when rings were present in sufficient number to account for the paroxysms that the patient had been observed to suffer. The disease was reproduced in the new host as the result of the mosquito biting, after an incubation period of 12 days, with characteristic symptoms of subtertian malarial fever. In this instance it was not feasible to obtain a blood smear until five days later, when typical ring forms of *P. falciparum* with double chromatin staining bodies were seen.

In the series in which 14 successful inoculations with *P. vivax* resulted, an untreated patient was employed to infect the 3 specimens of *A. punctipennis*. The primary object of the experiment was mosquito infectivity; therefore it was necessary to await gametocyte development, and during this two weeks' interval, daily blood examinations revealed several generations of complete schizogony. The parasites were undoubtedly characteristic forms of *P. vivax*. During the time when the mosquitoes were being applied to the patient, only two days presented suitable conditions for infection. Blood counts at this time revealed an average gametocyte count of 1 to 616 leucocytes. The volunteers used in the biting experiment suffered incubation periods varying from 13 to 19 days; and in each instance the presence of tertian malarial fever was substantially corroborated clinically and microscopically. The parasites observed varied from

young ameboid forms to complete schizogony and gametocyte formation. At least five of the 14 new hosts suffered relapses. The parasites observed on the second series of examinations were constantly and typically *P. vivax*.

The possible relationship of transmutation of malaria species and mixed infections has been brought to our attention in a recent example, the data of which are herewith presented: Five members of a family residing in northeastern Arkansas were found to harbor parasites of malaria during August as follows:

Mr. R., *P. vivax* (rings and gametocytes).
Mrs. R., *P. falciparum* (rings).
B. R., *P. vivax* (rings and gametocytes).
R. R., *P. falciparum* (rings and gametocytes).
A. R., *P. falciparum* (rings and gametocytes).

Two members of this family were selected to provide parasites in mosquito inoculation experiments. These persons were examined daily before and during laboratory experiments at a time when the probability of natural infection could be reasonably excluded. The protocol bearing on these two special cases is given herewith:

Blood findings in patient R. R.

Date.	Parasites.	Per cent.
September, 1919:		
2	*P. falciparum* gametocytes	2
3	do	3
4	do	2
5	do	1
6	do	1
8	do	1
11	do	.5
18	*P. vivax* rings and young schizonts in large numbers.	

Blood findings in patient A. R.

Date.	Parasites.	Per cent.
September, 1919:		
18	*P. falciparum* gametocytes	7
19	do	10
20	do	15
22	do	8
23	*P. falciparum* rings and gametocytes	5
24	*P. falciparum* gametocytes	8
25	*P. falciparum* rings and gametocytes	4
26	*P. falciparum* gametocytes	2
27	do	5
November, 1920:		
3	*P. falciparum* rings and few gametocytes.	
26	Parasites absent.	
May, 1920:		
28	*P. vivax* gametocytes	3
29	do	2

Discussion.

The group of cases presented here is offered as a typical illustration. The writer desires to emphasize that in these mixed infections har-

bored in one household repeated microscopical blood examinations show the relation as indicated in the tables.

The change of findings (from parasites of *P. falciparum* to *P. vivax*) on microscopical examinations was noted during exhaustive tests.

The foregoing data relative to the family R is presented without comment as to the moral indicated. This group and the circumstances involved may be accepted as a typical illustration of what the believer in alternation of parasites offers in support of his claim of transmutation. It is believed that innumerable examples of similar cases can be assembled, and one may draw his conclusions to fit the hypothesis to be defended. The blood samples taken from the cases presented here, though carefully scanned, may or may not have contained more than one type of parasite. Possibly this could not be definitely stated unless spleen or spinal punctures had been made. Again, one can not be certain of fresh infections being due to mosquito biting during the course of observation of these patients, because we do not know to what extent superinfection is a factor. Possible immune bodies produced through the invasion of the first type of parasites may mask the activities of the new species of parasite, inhibiting their development and causing them to remain latent or in retirement in the visceral organs. At any rate, unless more data are contributed through blood cultural studies and mosquito inoculation experiments, I do not believe that one can definitely prove that the plurality of species is not the normal status; and the principle of transmutation remains merely an interesting hypothesis, possibly of equal status with that of parthenogenesis.

Acknowledgment.—Acknowledgment is made to the sectional editor on malaria of the *Tropical Diseases Bulletin* for the free use of abstracts.

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AN OUTBREAK OF BOTULISM AT ST. ANTHONY'S HOSPITAL, OAKLAND, CALIF., IN OCTOBER, 1920.

By J. C. GEIGER, Epidemiologist, United States Public Health Service.

During the month of October, 1920, there occurred in the St. Anthony's Hospital, Oakland, Calif., an outbreak of botulism. There was a total of six cases, two of which could be considered mild and four severe. Of these latter, three died. Unfortunately none of these cases was recognized as botulism until the third day of illness, and therefore they were not immediately reported.

List of cases.

Case.	Hospital status.	Date of onset.	Termination.	Serum treatment.
		1920.	1920.	
Dr. E. S.	Bacteriologist	Oct. 15	Died Oct. 19	No.
J. F.	Patient	do	do	Do.
A. R.	Nurse	do	Died Oct. 20	Yes (50 c. c.).
A. Ru.	do	Oct. 16	Alive	Yes (200 c. c.).
S. W.	Patient	do	do	Yes (100 c. c.).
J. M.	do	do	do	No.

EPIDEMIOLOGY.

Counting back from the onset of the first cases, the afternoon of October 15, and taking into consideration the often-observed incubation period, 24 hours, it was evident that the probable causative food was served at the noon meal of October 14. Due consideration, however, was given to the meals of October 13, 14, and 15. Facts learned about the noon meal of October 14 practically determined that it was this meal at which food infected with *B. botulinus* was served to the nurses and patients of St. Anthony's Hospital.

At this meal two vegetables were served, Irish potatoes and commercial canned spinach, together with soup and a fresh beef stew. The Chinese cook opened two cans of spinach (the product of a San Francisco firm), washed the contents under a cold-water tap, placed them in separate parts of a baking pan, and baked in a gas-stove oven for probably 10 to 20 minutes. The odor rising from this spinach permeated the kitchen and was so distinctly a "bad odor" that the matter was called to the attention of the Chinese cook by a nurse who was passing through the kitchen. The nurse traced this odor to the spinach, and the Chinaman acknowledged that one of the cans of spinach was "spoiled." Then, at the nurse's suggestion and while observed by her, he removed what he considered the spoiled portion, opened a fresh can, and warmed up the material again in the oven. A census of the hospital for this particular meal showed that there were 25 people. Of this number, 12 can be eliminated as not eating the meal or not touching the spinach portion of what was served to them. Of the remaining number (13), six came down with symptoms of botulism. This leaves seven other persons, all of whom ate of the spinach, some only tasting it. Two nurses of these seven showed acute symptoms suggestive of botulism six days after the meal. They were diagnosed as psychological or pseudo cases.

There is a distinct history that those who died ate several helpings of the spinach. There can be no doubt of the odor and the spoilage of one can; yet it is agreed that the can was not a "swell" or "springer." Dr. E. S. and A. R., both of whom died, noticed a "cheesy taste," as did others. One patient, S. W., came to the hos-

pital for a broken arm Thursday and left it Friday morning. He ate the spinach and remarked about its peculiar taste. The last observation, together with odor and taste of the spinach, practically made it conclusive that commercial canned spinach was involved in these cases. Unfortunately neither the can nor the discarded spinach was available for examination. The western branch of the United States Bureau of Chemistry, the State board of health, the canning industries, and the Public Health Service have actively cooperated in tracing this spinach and investigating the conditions of its canning and all matters pertaining thereto.

SERUM TREATMENT.

None of these cases was seen by members of the botulism commission until Tuesday evening, October 19. The symptoms were typical from the onset, and diagnosis should have been comparatively easy. Serum in 50 c. c. amounts, types A and B, mixed and diluted to 300 c. c. with sterile distilled water, were given intravenously after previous desensitization of the patient. J. F. died before the writer arrived, and A. R. received one injection before death. S. W. was a mild case, but received two injections. J. M., another mild case, was not discovered in San Francisco until October 23, and was hospitalized there. No serum was given him.

A. Ru.—This case was a severe one. When seen on the evening of October 19, there was extreme difficulty in breathing, swallowing, and speech. A distressing cough was present, with inability to lift the tenacious ropy mucus present in the throat. A left-side ptosis was complete and a "superimposed" double vision was present. Extreme weakness was particularly noted in attempts to lift or hold up the head. There was a very rapid pulse and subnormal temperature. The patient, though apprehensive, gave no indications of pain or worry. Every clinical sign, from our observations of other cases, predicated a fatal termination. Serum was administered on the 19th, 20th, 21st, and 22d. Following the second injection on the 20th, the patient complained of chilly sensations, the pulse rate began to fall, and the temperature was elevated several degrees. About four hours after this second injection of serum, speech became understandable, that is, the patient lost the thickness and difficulty of enunciation and choosing of words. Breathing and swallowing and the ptosis improved. Double vision disappeared, yet the vision remained decidedly impaired. Improvement continued to a complete recovery, except that a rather violent erythema still persisted. This case, obtained late and treated with botulinus serum, types A and B, gave many indications of improvement with treatment.

The results of the autopsies on Dr. E. S. and A. R. are not yet available.

PUBLIC HEALTH ENGINEERING ABSTRACTS.

Education versus legislation in obtaining a pure milk supply.—P. B. Tustin, Member Canadian Food Board.—*Journal of Royal Sanitary Institute*, volume 41, No. 2, September, 1920, pages 58–62.

The success of the production of clean milk, as regards careful milking, washing, and sterilization of utensils, and thorough cooling of the milk, depends almost entirely upon the farmer himself and not on his buildings and equipment.

In Winnipeg, where dairymen are licensed, every effort is made by the dairy inspection department to assist the dairyman in providing sanitary conditions in his dairy. As an example, when it is found necessary to have a cement floor installed in a dairy, the owner of which lacks funds, the department's policy is to issue a provisional permit for three months, during which time the dairyman should prosper sufficiently to install the cement floor. In the meanwhile the department details an inspector with an automobile to take the dairyman on a visit to several sanitary dairies and to inform him regarding the various improvements and the financial advantages which would result should he adopt such improvements in his dairy. As a result of this policy within a period of 6 years, every one of the 150 dairies supplying raw milk to the city had the proper amount of light and ventilation, had concrete floors and separate milk houses containing a washroom equipped with boiler for sterilization, and a milk room equipped with a concrete cooling tank. At the beginning of the period only 2 dairies had concrete floors.

It would seem that well-qualified dairy instructors to assist the dairymen are needed more than inspectors.

The disinfection of drinking water.—Marshall C. Balfour.—*International Journal of Public Health*, volume 1, No. 2, September, 1920, pages 256–263.

The three principal methods of disinfection of drinking water are the use of hypochlorite, javellization, and the use of liquid chlorine. Javel water is a solution of sodium hypochlorite, obtained by treating hypochlorite of lime with sodium carbonate. During the war the French armies used javellized water, the Belgians and Italians the hypochlorite treatment, the British the hypochlorite treatment and, to some extent, liquid chlorine, and the Americans liquid chlorine extensively in large installations and hypochlorite for smaller quantities of water.

The treatment of the water supplies of Paris and London is discussed. The essential features of the three methods of disinfection are given and a comparison is made of their advantages and disadvantages.

The reaction upon the addition of the disinfectant are (1) the oxidation of the organic matter; (2) the direct chlorination of the organic matter; and (3) a bactericidal action. Investigations made by Race show that the disinfecting action must be attributed to a direct toxic action of the chlorine or chloramine.

The dosage is determined by (*a*) the nature and quantity of the oxidizable matter; (*b*) the temperature of the water; (*c*) the period of contact; and (*d*) the results desired; the higher the organic content and the temperature, the greater the dose, but not in a direct proportion.

Where disinfection is used in addition to filtration, the point of application in general is after filtration. When the technical details of the water plant make chlorination before filtration necessary, the chlorine must be allowed sufficient time to act before the chlorinated water reaches the filters. If the chlorine reaches the filters in an active state, it has a bad effect on the bacterial efficiency of the filters, and "taste" troubles may develop, which persist for some time after chlorination has been stopped.

Sir Alexander Houston notes two remedies for chlorinated water with a chlorine taste: Increasing the amount of chlorine with a subsequent increase of the dechlorinating agent will usually give a, normal tasting water, or at least one in which the taste is considerably modified; the addition of 2 to 8 pounds of permanganate or sodium manganate per million gallons will remove the chlorine taste. This latter method appears to be ineffective if the permanganate is added before, and the chlorine after, filtration, although the converse plan yields successful results, as does also their joint use either before or after filtration.

Dried milk as a food.—Col. R. J. Blackham, late Honorable Surgeon to the Viceroy of India.—*Journal of Royal Sanitary Institute*, volume 41, No. 2, September, 1920, pages 84–94.

A detailed summary of present knowledge of this useful article of food is made under the headings, (1) Varieties; (2) Physical characters; (3) Effects of drying on milk constituents; (4) Chemical composition; (5) Bacteriology of dried milk; (6) Use as infant's food; (7) As an adult and invalid food; (8) Economic and commercial considerations.

The conclusions are: (1) In dried milk we have a valuable food which has a wide sphere of usefulness not only in the feeding of infants and invalids but in domestic and commercial cookery; (2) for use with tea or coffee it can not be claimed that "reconstituted" dried milk is likely to be popular, and up to the present time it has not been placed on the market at a price sufficiently attractive to induce the public to put up with the difference between the fresh and "reconstituted" article; (3) for use in the Tropics and in places such as Malta, where cow's milk is unobtainable and goat's milk dangerous, it has

a large range of application, and on long voyages it presents many advantages over condensed milk; (4) for military purposes it will probably entirely displace condensed milk in future campaigns.

QUARANTINE FOR VENEREAL DISEASES.

COURT UPHOLDS RIGHT OF HEALTH OFFICER TO DETAIN AND QUARANTINE VENEREALLY INFECTED PERSONS.

The First District Court of Appeals of California has upheld the right of a local health officer to detain and quarantine persons who are venereally infected.[1]

A woman was arrested on a charge of vagrancy. She voluntarily submitted to a physical examination, and tests were made which showed that she was infected with venereal disease. The health officer of the City and County of San Francisco ordered her detained and quarantined. Habeas corpus proceedings were instituted to secure the woman's release from quarantine, but the district court of appeals held that the health authorities had the power to isolate venereally infected persons.

DEATHS DURING WEEK ENDED NOV. 13, 1920.

[From the "Weekly Health Index," Nov. 16, 1920, issued by the Bureau of the Census, Department of Commerce.]

Deaths from all causes in certain large cities of the United States during the week ended Nov. 13, 1920, infant mortality (per cent), annual death rate, and comparison with corresponding week of preceding years.

City.	Population Jan. 1, 1920, subject to revision.	Week ended Nov. 13, 1920.		Average annual death rate per 1,000.[3]	Per cent of deaths under 1 year.	
		Total deaths.	Death rate.[2]		Week ended Nov. 13, 1920.	Previous year or years.[3]
Akron, Ohio	208,435	24	6.0	[4] 10.9	20.8	[4] 10.0
Albany, N. Y.	113,344	31	14.3	C 13.0	9.7	C 21.4
Atlanta, Ga.	200,616	77	20.0	C 15.8	18.2	C 13.3
Baltimore, Md.	733,826	176	12.5	A 16.5	19.3	A 15.2
Birmingham, Ala.	178,270	46	13.5	A 17.9	10.9	A 13.1
Boston, Mass.	747,923	189	13.2	A 15.5	15.9	A 15.4
Bridgeport, Conn.	143,152	36	13.1	A 13.4	25.0	A 18.8
Buffalo, N. Y.	506,775	123	12.7	C 13.1	17.9	C 19.8
Cambridge, Mass.	109,456	26	12.4	A 11.2	19.2	A 12.2
Chicago, Ill.	2,701,705	542	10.5	A 12.7	11.8	A 15.9
Cincinnati, Ohio	401,247	104	13.5	C 13.7	13.5	C 11.4
Cleveland, Ohio	796,836	170	11.1	C 10.5	14.7	C 14.6
Columbus, Ohio	237,031	66	14.5	C 13.1	13.6	C 15.3
Dallas, Tex.	158,976	37	12.1	A 12.2	16.2	A 15.3
Dayton, Ohio	153,830	28	9.5	C 8.2	10.7	C 20.8
Denver, Colo.	256,491	74	15.0	A 12.1	16.2	.....
Detroit, Mich.	993,739	188	9.9	.....	24.5	.....
Fall River, Mass.	120,485	34	14.7	C 15.6	20.4	C 19.4
Grand Rapids, Mich.	137,634	35	13.3	C 13.4	22.9	C 11.4
Hartford, Conn.	138,036	35	13.2	.....	22.9	.....

[1] Application of Travers (192 Pac., 454).
[2] Annual rates per 1,000 population.
[3] "A" indicates data for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates data for the corresponding week of the year 1919.
[4] Data are based on statistics of 1915, 1916, and 1917.

Deaths from all causes in certain large cities in the United States during the week ended Nov. 13, 1920, infant mortality (per cent), annual death rate, and comparison with corresponding week of preceding years—Continued.

City.	Population Jan. 1, 1920, subject to revision.	Week ended Nov. 13, 1920.		Average annual death rate per 1,000.	Per cent of deaths under 1 year.	
		Total deaths.	Death rate.		Week ended Nov. 13, 1920.	Previous year or years.
Indianapolis, Ind	314,194	76	12.6	C 9.4	13.2	C 10.7
Jersey City, N. J	298,679	60	10.5	C 12.1	23.3	C 17.4
Kansas City, Kans	101,177	19	9.8	.....	.....	.....
Kansas City, Mo	321,410	64	10.3	C 11.6	7.8	C 14.1
Los Angeles, Calif	576,673	164	14.8	A 12.8	10.4	A 8.4
Louisville, Ky	234,891	72	16.0	C 11.3	16.7	C 19.6
Lowell, Mass	112,479	26	12.1	A 16.2	30.8	A 21.0
Milwaukee, Wis	457,147	82	9.4	A 11.2	12.2	A 21.5
Minneapolis, Minn	380,582	55	7.5	C 8.9	10.9	C 12.5
Nashville, Tenn	118,342	46	20.4	C 17.7	15.2	C 12.5
Newark, N. J	414,216	81	10.2	C 11.0	17.3	C 20.7
New Bedford, Mass	121,217	24	10.3	A 12.3	20.8	A 25.8
New Haven, Conn	162,519	39	12.5	C 8.7	25.6	C 25.9
New Orleans, La	387,219	125	16.8	A 20.3	13.6	A 10.0
New York, N. Y	5,620,018	1,128	10.5	C 10.4	14.8	C 11.3
Norfolk, Va	115,777	31	14.0	.....	6.5	.....
Oakland, Calif	216,361	42	10.1	A 11.8	19.0	A 5.7
Omaha, Nebr	191,601	26	7.1	C 11.0	38.5	C 7.5
Philadelphia, Pa	1,823,158	437	12.5	[4] 15.4	17.6	[4] 13.4
Pittsburgh, Pa	588,193	133	11.8	C 11.9	18.8	C 20.1
Portland, Oreg	258,288	37	7.5	C 9.6	18.9	C 14.9
Providence, R. I	237,595	58	12.7	C 11.9	12.1	C 23.4
Richmond, Va	171,667	62	18.8	C 16.3	14.5	C 15.1
Rochester, N. Y	295,750	50	8.8	C 10.9	12.0	C 14.8
St. Louis, Mo	772,897	169	11.4	C 10.6	8.3	C 5.1
St. Paul, Minn	234,680	44	9.8	C 7.1	13.6	C 6.3
Salt Lake City, Utah	118,110	30	13.2	A 12.7	13.3	.....
San Francisco, Calif	506,676	142	14.6	C 11.2	6.3	C 4.6
Spokane, Wash	104,204	26	13.0	C 16.5	11.5	C 0.0
Springfield, Mass	129,338	22	8.9	.....	4.5	.....
Syracuse, N. Y	171,647	49	14.9	C 8.6	16.3	C 10.7
Toledo, Ohio	243,164	48	10.3	A 13.8	14.6	A 12.3
Trenton, N. J	119,289	33	14.4	A 18.7	12.1	A 29.1
Washington, D. C	457,571	106	12.6	A 16.8	13.2	A 12.1
Wilmington, Del	110,168	19	9.0	C 10.5	36.8	.....
Worcester, Mass	179,754	42	12.2	C 11.1	21.4	C 13.2
Yonkers, N. Y	100,176	18	9.4	A 12.6	33.3	A 21.4
Youngstown, Ohio	132,358	21	8.3	.....	9.5	.....

[4] Data are based on statistics of 1915, 1916, and 1917.

Summary of information received by telegraph from industrial insurance companies for week ended Nov. 13, 1920.

Policies in force	45,132,230
Number of death claims	7,488
Death claims per 1,000 policies in force, annual rate	8.7

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

UNITED STATES.

CURRENT STATE SUMMARIES.

Telegraphic Reports for Week Ended Nov. 20, 1920.

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers.

ALABAMA.

	Cases.
Cerebrospinal meningitis	1
Diphtheria	44
Hookworm	55
Scarlet fever	13
Smallpox	24
Tuberculosis	20
Typhoid fever	13

ARKANSAS.

Cerebrospinal meningitis	1
Chicken pox	6
Diphtheria	47
Hookworm	2
Influenza	56
Malaria	83
Measles	59
Ophthalmia neonatorum	1
Pellagra	3
Scarlet fever	15
Smallpox	7
Trachoma	1
Tuberculosis	23
Typhoid fever	22
Whooping cough	6

CALIFORNIA.

Cerebrospinal meningitis	5
Influenza	12
Lethargic encephalitis	3
Smallpox:	
Alameda County	25
Escondido	10
Pomona	14
Richmond	12
Sacramento	10
Scattering	78
Typhoid fever	12

CONNECTICUT.

	Cases.
Cerebrospinal meningitis	1
Chicken pox	14
Diphtheria:	
Bridgeport	15
Hartford	15
New Britain	11
New Haven	16
Waterbury	12
Scattering	47
German measles	3
Influenza	17
Measles:	
Pomfret	10
Putnam (city)	32
Scattering	9
Mumps	17
Pneumonia (lobar)	15
Scarlet fever:	
Bridgeport	10
New Britain	9
New Haven	14
Scattering	49
Tuberculosis (all forms)	23
Typhoid fever	13
Whooping cough	59

DELAWARE.

Chicken pox	2
Diphtheria	6
Scarlet fever	10
Tuberculosis	5
Whooping cough	10

FLORIDA.

Diphtheria	23
Influenza	2
Malaria	27

CURRENT STATE SUMMARIES—Continued.

Telegraphic Reports for Week Ended Nov. 20, 1920—Continued.

FLORIDA—continued.

	Cases.
Scarlet fever	4
Smallpox	10
Trachoma	1
Typhoid fever	5

GEORGIA.

Chicken pox	8
Conjunctivitis (acute infectious)	6
Dengue	19
Diphtheria	50
Dysentery (bacillary)	3
German measles	1
Hookworm	3
Influenza	23
Malaria	43
Measles	2
Paratyphoid fever	1
Pneumonia	13
Poliomyelitis	1
Scarlet fever	34
Septic sore throat	8
Smallpox	21
Tuberculosis (all forms)	13
Typhoid fever	10
Whooping cough	4

ILLINOIS.

Cerebrospinal meningitis—Chicago	1
Diphtheria:	
Chicago	367
Cicero	11
Scattering	94
Influenza	21
Lethargic encephalitis—Chicago	1
Pneumonia	160
Poliomyelitis:	
Champaign	1
Chicago	4
Galesburg	1
Knox County—Rio Township	1
Scarlet fever:	
Chicago	155
Springfield	20
Scattering	103
Smallpox:	
Polo	10
Scattering	41
Typhoid fever	13

INDIANA.

Diphtheria	101
Scarlet fever	164
Smallpox	138
Typhoid fever	27

IOWA.

Diphtheria	34
Influenza	1
Poliomyelitis	2
Scarlet fever	98
Smallpox:	
Decorah	52
Hiteman	8

IOWA—continued.

Smallpox—Continued.	Cases.
Ottumwa	38
West Union	12
Scattering	59
Typhoid fever	2

KANSAS.

Chicken pox	29
Diphtheria	313
Influenza	6
Measles	163
Mumps	3
Pneumonia	18
Poliomyelitis	1
Scarlet fever	232
Smallpox	27
Trachoma	2
Tuberculosis	25
Typhoid fever	39
Whooping cough	54

LOUISIANA.

Diphtheria	25
Influenza	14
Malaria	50
Scarlet fever	9
Smallpox	28
Typhoid fever	19

MAINE.

Chicken pox	21
Diphtheria	26
German measles	1
Influenza	1
Measles	79
Mumps	4
Paratyphoid fever	1
Pneumonia	3
Poliomyelitis:	
Gorham	1
Millbridge	1
Scarlet fever	25
Septic sore throat	2
Smallpox	7
Tuberculosis	10
Typhoid fever	11
Whooping cough	55

MARYLAND.[1]

Cerebrospinal meningitis	1
Chicken pox	40
Diphtheria	88
Dysentery	6
Impetigo contagiosa	2
Influenza	30
Malaria	3
Measles	11
Meningitis	1
Mumps	11
Ophthalmia neonatorum	1
Paratyphoid fever	1
Pneumonia (all forms)	47

[1] Week ended Friday.

CURRENT STATE SUMMARIES—Continued.

Telegraphic Reports for Week Ended Nov. 20, 1920—Continued.

MARYLAND—continued.

	Cases.
Poliomyelitis	1
Scarlet fever	44
Tuberculosis	79
Typhoid fever	26
Vincent's angina	1
Whooping cough	49

MASSACHUSETTS.

Anthrax	1
Cerebrospinal meningitis	1
Chicken pox	141
Conjunctivitis (suppurative)	5
Diphtheria	201
German measles	2
Influenza	15
Measles	450
Mumps	35
Ophthalmia neonatorum	26
Pneumonia (lobar)	78
Poliomyelitis	24
Scarlet fever	149
Septic sore throat	2
Tetanus	2
Tuberculosis (all forms)	166
Typhoid fever	21
Whooping cough	88

MINNESOTA.

Poliomyelitis	3
Smallpox	13

MISSISSIPPI.

Diphtheria	30
Scarlet fever	22
Smallpox	12
Typhoid fever	11

MONTANA.

Diphtheria	12
Poliomyelitis—Missoula	1
Scarlet fever	20
Smallpox	20
Typhoid fever	2

NEBRASKA.

Cerebrospinal meningitis—Platte County	1
Chicken pox	42
Diphtheria:	
Omaha	13
Scattering	16
Measles:	
Bartley	11
Scattering	7
Mumps	5
Pneumonia	1
Poliomyelitis—Dakota City	1
Scarlet fever:	
Chadron	8
Indianola	35
Scattering	34
Septic sore throat	6

NEBRASKA—continued.

Smallpox:	Cases.
Greenwood	13
Scattering	47
Typhoid fever	3
Whooping cough	11

NEW JERSEY.

Cerebrospinal meningitis	4
Chicken pox	104
Diphtheria	247
Influenza	11
Measles	34
Poliomyelitis	1
Pneumonia	86
Scarlet fever	129
Typhoid fever	25
Whooping cough	121

NEW MEXICO.

Chicken pox	29
Diphtheria:	
Duran	8
Scattering	25
Influenza	3
Measles	15
Mumps	3
Pneumonia	7
Scarlet fever	3
Smallpox	2
Trachoma	1
Tuberculosis	33
Typhoid fever	17
Whooping cough	8

NEW YORK.

(Exclusive of New York City.)

Cerebrospinal meningitis—North Salem	1
Diphtheria	482
Influenza	35
Lethargic encephalitis	2
Measles	744
Pneumonia	180
Poliomyelitis:	
Eastwood	1
Southampton	1
Wilson	1
Scarlet fever	219
Smallpox—Elmira Heights	8
Typhoid fever	50
Whooping cough	340

NORTH CAROLINA.

Chicken pox	48
Diphtheria	159
German measles	2
Measles	57
Scarlet fever	45
Septic sore throat	7
Smallpox	16
Typhoid fever	19
Whooping cough	103

CURRENT STATE SUMMARIES—Continued.

Telegraphic Reports for Week Ended Nov. 20, 1920—Continued.

SOUTH DAKOTA.

	Cases.
Chicken pox	12
Diphtheria	8
Measles	7
Scarlet fever	21
Smallpox	2
Typhoid fever	1
Whooping cough	1

TEXAS.

Cerebrospinal meningitis	1
Diphtheria	105
Influenza	18
Pneumonia	7
Scarlet fever	19
Smallpox	15
Tuberculosis	17
Whooping cough	22

VERMONT.

Chicken pox	31
Diphtheria	4
Measles	10
Mumps	20
Pneumonia	2
Scarlet fever	17
Smallpox	7
Typhoid fever	3
Whooping cough	41

WASHINGTON.

Chicken pox	62
Diphtheria	51
Influenza	3
Measles	13
Mumps	14
Scarlet fever	49
Smallpox	82

WASHINGTON—continued.

	Cases.
Tuberculosis	3
Typhoid fever	11
Whooping cough	20

WEST VIRGINIA.

Diphtheria:	
Wheeling	22
Scattering	26
Measles	18
Scarlet fever	14
Smallpox	3
Typhoid fever	8

WISCONSIN.

Milwaukee:	
Cerebrospinal meningitis	1
Chicken pox	20
Diphtheria	60
Measles	7
Scarlet fever	27
Smallpox	17
Tuberculosis	22
Whooping cough	11
Scattering:	
Cerebrospinal meningitis	1
Chicken pox	65
Diphtheria	76
Influenza	16
Measles	58
Ophthalmia neonatorum	2
Poliomyelitis	3
Scarlet fever	79
Smallpox	85
Trachoma	1
Tuberculosis	10
Typhoid fever	13
Whooping cough	134

Kentucky Report for Week Ended Nov. 13, 1920.

Cerebrospinal meningitis—Boyd County	1
Chicken pox	18
Continued fever	3
Diphtheria:	
Jefferson County	24
McCracken County	15
Scattering	71
Dysentery	4
German measles	1
Influenza	22
Malaria	7
Measles:	
Christian County	6
Harlan County	8
Mumps	3
Pellagra	1
Pneumonia	16
Scarlet fever:	
Jefferson County	12
Kenton County	15
Scattering	21
Septic sore throat—Christian County	2
Smallpox	16
Tonsillitis	2
Trachoma	2
Tuberculosis:	
Jefferson County	10
Scattering	12
Typhoid fever	18
Whooping cough	11

SUMMARY OF CASES REPORTED MONTHLY BY STATES.

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week.

State.	Cerebrospinal meningitis.	Diphtheria.	Influenza.	Malaria.	Measles.	Pellagra.	Poliomyelitis.	Scarlet fever.	Smallpox.	Typhoid fever.
October, 1920.										
District of Columbia	1	74	.....	.....	12	.....	.....	68	2	23
Louisiana	.....	49	61	162	95	8	.....	39	26	53
Michigan	.....	1,261	.....	.....	109	.....	13	886	295	168
New York	15	1,954	153	.....	1,213	.....	9	975	19	382
South Dakota	.....	36	.....	.....	32	.....	.....	93	21	12
West Virginia	1	384	135	.....	163	.....	2	296	85	138

ANTHRAX.

Boise, Idaho—Week Ended Nov. 6, 1920.

During the week ended November 6, 1920, one case of anthrax was reported at Boise, Idaho.

CEREBROSPINAL MENINGITIS.

City Reports for Week Ended Nov. 6, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920		Place.	Average cases.	1920	
		Cases.	Deaths.			Cases.	Deaths.
California:				North Carolina:			
San Francisco	0	2	1	Charlotte	6	.....	1
Connecticut:				Ohio:			
Bridgeport	(1)	1	1	Akron	(1)	1	.....
Georgia:				Cleveland	(1)	.....	1
Atlanta	1	.....	1	Columbus	0	1	.....
Illinois:				Pennsylvania:			
Chicago	3	3	2	Philadelphia	1	1	.....
Kansas:				Rhode Island:			
Kansas City	0	1	.....	Providence	0	.....	1
Topeka	0	.....	1	Warwick	.....	1	.....
Louisiana:				South Carolina:			
New Orleans	(1)	1	1	Columbia	0	1	.....
Maine:				Virginia:			
Auburn	.....	1	1	Norfolk	0	1	.....
Massachusetts:				Wisconsin:			
Fall River	0	2	1	Eau Claire	0	1	.....
Michigan:				Milwaukee	1	1	1
Detroit	(1)	.....	1	Wausau	.....	.....	1
Port Huron	.....	1	.....				
New York:							
Newburgh	0	1	1				
New York	4	2	3				

[1] Average less than 1.

DENGUE.

Savannah, Ga.—Week Ended Nov. 6, 1920.

During the week ended November 6, 1920, 18 cases of dengue were reported at Savannah, Ga.

DIPHTHERIA.

See Telegraphic weekly reports from States, p. 2865; Monthly summaries, by States, p. 2869; and Weekly reports from cities, p. 2877.

INFLUENZA.

City Reports for Week Ended Nov. 6, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			Michigan:		
Birmingham		2	Detroit	3	1
Mobile		2	Missouri:		
Arkansas:			Kansas City		1
Little Rock	2		Nebraska:		
California:			Beatrice		1
Los Angeles	2		New Jersey:		
San Francisco	8		Jersey City	1	
Santa Cruz		1	Kearny	1	
Colorado:			Trenton	7	
Denver		1	New York:		
Connecticut:			Buffalo	1	
Hartford	1	1	Cohoes	1	
New Britain	10	1	New York	17	4
District of Columbia:			Saratoga Springs	4	
Washington	1		Syracuse	1	
Georgia:			Ohio:		
Atlanta	4		Cincinnati	2	
Brunswick	2		Cleveland	5	
Illinois:			Springfield		1
Chicago	16	3	Pennsylvania:		
Iowa:			Philadelphia		2
Cedar Rapids	1	1	Tennessee:		
Kansas:			Nashville		1
Hutchinson	1		Texas:		
Parsons	1		Dallas	1	1
Kentucky:			Virginia:		
Louisville	1		Petersburg	1	
Louisiana:			Richmond		1
Baton Rouge	1	1	Roanoke	3	
Monroe	1	1	Washington:		
Maryland:			Spokane	4	
Baltimore	3		West Virginia:		
Cumberland	3		Huntington	1	
Massachusetts:			Wisconsin:		
Attleboro	1		Milwaukee	1	
Boston	3				
Cambridge	1				
North Adams	1				
Waltham	3	1			

LEPROSY.

Norfolk, Va.—Week Ended Nov. 6, 1920.

During the week ended November 6, 1920, one case of leprosy was reported at Norfolk, Va.

LETHARGIC ENCEPHALITIS.

District of Columbia and New York—October, 1920.

During October, 1920, two cases of lethargic encephalitis were reported in Washington, D. C., and eight cases were reported in the State of New York.

MALARIA.

City Reports for Week Ended Nov. 6, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			Massachusetts:		
Birmingham	1		Framingham	1	
Arkansas:			Winthrop	1	
Little Rock	4		Michigan:		
North Little Rock		1	Detroit	1	
California:			Texas:		
Sacramento	2		Dallas	26	1
Georgia:			Fort Worth		1
Atlanta	3		Waco		2
Brunswick	2		Virginia:		
Savannah	3	1	Norfolk	1	
Louisiana:					
Baton Rouge	2				

MEASLES.

See Telegraphic weekly reports from States, p. 2865; Monthly summaries by States, p. 2869; and Weekly reports from cities, p. 2877.

PELLAGRA.

City Reports for Week Ended Nov. 6, 1920.

Place.	Cases.	Deaths.	Place.	Cases.	Deaths.
Alabama:			South Carolina:		
Mobile		1	Charleston		1
Montgomery		1	Tennessee:		
Louisiana:			Memphis		1
Baton Rouge	1		Nashville	1	
New Orleans	1	1	Virginia:		
Nebraska:			Richmond		1
Fremont		1			
North Carolina:					
Raleigh		1			

PLAGUE.

Human Cases of Plague Reported.

Place.	Period covered.	Cases.	Deaths.	Remarks.
Florida:	1920.			
Pensacola	May 31 to Aug. 31	10	4	
	Sept. 1 to Nov. 20	0	0	
Louisiana:	1919.			
New Orleans	Oct. 22 to Dec. 31	12	4	
	1920.			
	Jan. 1 to Apr. 30	0	0	
	May 1 to Aug. 31	7	3	
	Sept. 1 to Nov. 20	0	0	
Texas:				
Beaumont	June 19 to Aug. 20	14	5	
	Aug. 21 to Nov. 20	0	0	
Galveston	June 8 to Oct. 20	16	10	
	Oct. 21 to Nov. 13	0	0	
	Nov. 14	1	1	
	Nov. 15–20	0	0	
Port Arthur	July 7	1	1	From Galveston.

PLAGUE—Continued.

Plague-infected Rodents.

Place.	Period covered.	Rodents found plague infected.
Florida:		
Pensacola	1920.	
	June 28 to Sept. 19	31
	Sept. 20 to Nov. 20	0
Louisiana:		
New Orleans	1919.	
	November and December	308
	1920.	
	January to October	265
	Nov. 1–17	0
	Nov. 18	1
	Nov. 19	1
Texas:		
Beaumont	July 1 to Oct. 25	123
	Oct. 26 to Nov. 20	0
Galveston	June 21 to Nov. 9	61
	Nov. 10-20	0
Port Arthur	Oct. 25	1

PNEUMONIA (ALL FORMS).

City Reports for Week Ended Nov. 6, 1920.

Place.	Cases.	Deaths.
Alabama:		
Birmingham		4
Mobile		1
Montgomery		1
Arkansas:		
Hot Springs	1	
Little Rock	2	
California:		
Long Beach	4	2
Los Angeles	20	6
Oakland	1	4
Pasadena	1	
Sacramento	3	1
San Diego	4	5
San Francisco	6	5
Colorado:		
Denver		11
Pueblo		1
Connecticut:		
Bridgeport	4	5
Bristol	2	
Hartford	1	2
New Britain	1	1
New Haven		4
Norwalk		1
District of Columbia:		
Washington		3
Georgia:		
Atlanta	3	4
Macon	1	1
Rome	3	
Savannah		3
Illinois:		
Alton		1
Chicago	83	29
Danville	1	
East St. Louis		3
Freeport	1	
Galesburg		1
Granite City		1
Jacksonville		1
Kewanee		1
Oak Park	1	1
Peoria		1
Rockford		5
Illinois—Continued.		
Rock Island		2
Springfield		3
Indiana:		
East Chicago		1
Elkhart	1	1
Fort Wayne		1
Hammond		2
Indianapolis		1
Marion		1
Richmond		1
Kansas:		
Kansas City	1	
Parsons	2	
Topeka		2
Wichita		1
Kentucky:		
Louisville		4
Paducah	1	
Louisiana:		
Baton Rouge	1	1
Lake Charles		1
New Orleans		8
Maine:		
Biddeford		1
Portland	2	3
Maryland:		
Baltimore	19	18
Cumberland	1	1
Massachusetts:		
Boston	9	19
Brockton	1	1
Cambridge	3	2
Chelsea	2	
Chicopee		1
Everett	1	
Fall River	1	1
Framingham		1
Holyoke		2
Leominster	1	
Lowell	6	8
Malden		2
Medford		1
New Bedford		3
Pittsfield		1

PNEUMONIA (ALL FORMS)—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

Place.	Cases.	Deaths.
Massachusetts—Continued.		
Quincy	1	
Saugus		1
Somerville	3	1
Southbridge	2	
Springfield	3	1
Worcester		2
Michigan:		
Ann Arbor	2	
Benton Harbor	1	
Detroit	28	11
Flint	2	2
Grand Rapids		1
Highland Park	1	1
Ironwood	2	1
Kalamazoo	2	
Muskegon	2	1
Pontiac	1	
Sault Ste. Marie	1	1
Minnesota:		
Duluth	1	4
Minneapolis		6
St. Paul		2
Missouri:		
Independence	3	3
Kansas City	2	6
St. Joseph		4
Montana:		
Billings	3	1
Butte	1	
Great Falls	2	1
Nebraska:		
Lincoln		1
Omaha		4
New Hampshire:		
Berlin	1	1
Manchester	1	1
Portsmouth	1	
New Jersey:		
Atlantic City		1
Belleville	2	
Elizabeth		2
Hackensack		1
Hoboken		3
Jersey City	7	
Morristown	1	
Orange	2	
Passaic	1	
Plainfield		2
Trenton	4	1
West Orange	1	1
New York:		
Albany	2	
Auburn		1
Buffalo	17	9
Elmira	1	
Geneva		1
Glens Falls	1	1
Jamestown	1	
Lockport		1
Mount Vernon	1	
Newburgh	2	1
New York	183	95
New York—Continued.		
Niagara Falls	1	1
Peekskill		1
Rochester	8	1
Rome	1	
Schenectady	3	1
Syracuse	2	1
Troy	2	1
Yonkers	2	2
North Carolina:		
Charlotte		6
Durham		1
Greensboro		1
Rocky Mount		1
Winston-Salem		1
Ohio:		
Akron	1	
Cincinnati		4
Cleveland	12	14
Columbus	7	6
Dayton	2	
Lancaster		1
Lima		1
Springfield		1
Toledo		4
Youngstown		4
Oklahoma:		
Oklahoma City		1
Oregon:		
Portland		4
Pennsylvania:		
Philadelphia	29	32
Rhode Island:		
Pawtucket		1
Providence		1
South Carolina:		
Charleston		4
South Dakota:		
Sioux Falls		1
Tennessee:		
Memphis		4
Nashville		2
Texas:		
Dallas	3	6
El Paso		3
Fort Worth		2
Galveston		2
Waco		1
Vermont:		
Burlington		1
Virginia:		
Alexandria		2
Lynchburg		3
Richmond		4
West Virginia:		
Huntington		1
Wheeling		1
Wisconsin:		
Milwaukee	5	4
Racine		1
Wyoming:		
Cheyenne	1	1

POLIOMYELITIS (INFANTILE PARALYSIS).

City Reports for Week Ended Nov. 6, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920		Place.	Average cases.	1920	
		Cases.	Deaths.			Cases.	Deaths.
California:				Michigan:			
Los Angeles	(1)	1	1	Detroit	0	2	1
Illinois:				Flint	0	1	1
Chicago	(2)	3	.....	Minnesota:			
Galesburg	(1)	1	.....	St. Paul	(1)	1	.....
Oak Park	0	1	.....	Missouri:			
Indiana:				St. Louis	0	1	.....
Fort Wayne	0	1	.....	New Hampshire:			
Indianapolis	(1)	1	.....	Manchester	(1)	1	.....
Massachusetts:				New York:			
Boston	(3)	2	.....	New York	43	10	1
Cambridge	1	2	.....	Ohio:			
Chelsea	0	1	.....	Cleveland	1	1	.....
Danvers	.....	1	.....	Pennsylvania:			
Haverhill	0	2	.....	Philadelphia	40	.....	1
Newburyport	0	2	.....	Wisconsin:			
Newton	(1)	1	.....	Eau Claire	0	1	.....
Northampton	(1)	1	.....				
Pittsfield	0	1	.....				
Waltham	(1)	2	.....				

[1] Average less than 1.
[2] Excluding 1916 and 1917, average less than 1.
[3] Excluding 1916, an epidemic year, average less than 1.
[4] Excluding 1916, an epidemic year.

RABIES IN MAN.

Providence, R. I.—Week Ended Nov. 6, 1920.

During the week ended November 6, 1920, one death from rabies in man was reported at Providence, R. I.

SCARLET FEVER.

See Telegraphic weekly reports from States, p. 2865; Monthly summaries by States, p. 2869; and Weekly reports from cities, p. 2877.

SMALLPOX.

City Reports for Week Ended Nov. 6, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920	
		Cases.	Deaths.
Arkansas:			
Little Rock	(1)	1	
California:			
Los Angeles	(1)	2	
Sacramento	0	4	
San Francisco	0	1	
San Jose	(1)	4	
Colorado:			
Denver	7	8	
Pueblo	1	2	
Georgia:			
Atlanta	1	1	
Macon	0	3	
Idaho:			
Boise	3	4	
Illinois:			
Bloomington		1	
Chicago	1	2	
East St. Louis	0	3	
Pekin	0	2	
Rockford	0	7	
Springfield	1	1	
Indiana:			
Bedford	0	3	
Frankfort		2	
Hammond	0	1	
Indianapolis	5	5	
Marion	0	2	
Mishawaka	0	1	
South Bend	(1)	1	
Terre Haute	0	3	
Iowa:			
Des Moines	(1)	1	
Dubuque	(1)	3	
Marshalltown	6	1	
Sioux City	2	4	
Kansas:			
Fort Scott	0	2	
Louisiana:			
Baton Rouge	0	1	
New Orleans	1	6	
Maine:			
Waterville		1	
Michigan:			
Battle Creek	0	4	
Detroit	4	8	
Sault Ste. Marie	0	1	
Minnesota:			
Duluth	(1)	2	
Mankato	0	1	
Minneapolis	4	17	
Minnesota—Continued.			
St. Paul	6	5	
Winona	0	5	
Missouri:			
Hannibal		1	
Independence	0	1	
Kansas City	12	2	
St. Louis	1	3	
Montana:			
Great Falls	0	1	
Missoula	0	3	
Nebraska:			
Omaha	4	2	
New York:			
Albany	0	2	
New York	0	2	
North Carolina:			
Winston-Salem	0	1	
North Dakota:			
Fargo	0	12	
Grand Forks		3	
Ohio:			
Akron	(1)	16	
Alliance	0	1	
Canton	(1)	2	
Cleveland	5	9	
Dayton	1	2	
Lima	0	8	
Lorain	0	1	
Middletown	0	1	
Springfield	(1)	2	
Tiffin	0	11	
Oregon:			
Portland	3	14	
Texas:			
Galveston	0	1	
Utah:			
Salt Lake City	2	16	
Vermont:			
Rutland	0	7	
Washington:			
Bellingham	0	2	
Spokane		5	
Tacoma	0	8	
Yakima	0	2	
Wisconsin:			
La Crosse	2	3	
Marinette	(1)	4	
Milwaukee	4	13	
Sheboygan		5	
Superior	1	1	

[1] Average less than 1.

TETANUS.

City Reports for Week Ended Nov. 6, 1920.

Place.	Cases.	Deaths.
Illinois:		
Chicago	2	
Rockford	1	1
Louisiana:		
New Orleans		1
Missouri:		
St. Joseph		1
St. Louis	1	
New Hampshire:		
Berlin	1	1
New Jersey:		
Trenton		1
New York:		
New York	1	1
Ohio:		
Lima	1	1
Texas:		
Dallas		1

TUBERCULOSIS.

See Telegraphic weekly reports from States, p. 2865, and Weekly reports from cities, p. 2877.

TYPHOID FEVER.

City Reports for Week Ended Nov. 6, 1920.

The column headed "Average cases" gives the average number of cases reported during the corresponding week of the years 1915 to 1919, inclusive. In instances in which the information is not available for the full five years, the average includes from one to four years.

Place.	Average cases.	1920	
		Cases.	Deaths.
Alabama:			
Birmingham	7	3	.....
Mobile	(1)	1	.....
Arkansas:			
Fort Smith	.....	3	.....
Little Rock	1	1	.....
California:			
Long Beach	(1)	1	.....
Los Angeles	5	5	.....
Sacramento	1	1	.....
San Diego	0	1	.....
San Francisco	2	2	.....
San Jose	0	1	.....
Colorado:			
Pueblo	2	3	.....
Connecticut:			
New Haven	2	9	2
District of Columbia:			
Washington	6	2	.....
Illinois:			
Chicago	9	24	2
Danville	(1)	3	.....
East St. Louis	0	1	1
Freeport	0	1	.....
Kewanee	.....	2	.....
Mattoon	.....	1	.....
Peoria	0	1	.....
Indiana:			
Bedford	0	1	.....
Hammond	0	1	.....
Indianapolis	4	1	.....
Logansport	0	1	.....
Richmond	.....	1	.....
Iowa:			
Burlington	(1)	1	.....
Kansas:			
Hutchinson	0	1	.....
Kansas City	(1)	1	.....
Wichita	1	2	1
Kentucky:			
Louisville	1	2	.....
Louisiana:			
New Orleans	7	1	2
Maine:			
Auburn	0	1	.....
Bangor	0	1	.....
Waterville	.....	1	.....
Maryland:			
Baltimore	16	4	2
Cumberlnad	(1)	2	.....
Massachusetts:			
Beverly	(1)	2	.....
Boston	4	2	1
Chicopee	(1)	1	.....
Fall River	4	1	.....
Gardner	0	.....	1
Haverhill	(1)	1	.....
Lowell	(1)	1	.....
Medford	(1)	1	.....
New Bedford	2	2	.....
Michigan:			
Detroit	8	4	2
Flint	3	1	.....
Pontiac	1	1	.....
Port Huron	.....	1	.....
Minnesota:			
St. Paul	1	3	.....
Missouri:			
Kansas City	2	1	.....
St. Joseph	0	2	1
St. Louis	12	3	1
Nebraska:			
Omaha	(1)	.....	1
Nevada:			
Reno	0	1	.....
New Jersey:			
Jersey City	1	1	.....
Trenton	(1)	1	.....
New Mexico:			
Albuquerque	3	2	.....
New York:			
Albany	3	3	.....
Auburn	(1)	1	.....
Buffalo	3	.....	1
Elmira	0	1	.....
Ithaca	0	2	.....
New York	30	30	4
Rochester	1	2	.....
Schenectady	(1)	2	.....
Syracuse	(1)	1	.....
Ohio:			
Ashtabula	0	2	.....
Cleveland	5	4	.....
Fremont	(1)	1	.....
Lancaster	0	2	.....
Lima	2	.....	1
Marion	1	1	.....
Springfield	1	1	.....
Toledo	2	3	.....
Youngstown	2	2	.....
Oklahoma:			
Oklahoma City	2	3	.....
Oregon:			
Portland	2	2	.....
Pennsylvania:			
Philadelphia	13	5	1
Rhode Island:			
Providence	2	1	.....
South Carolina:			
Charleston	(1)	3	.....
Columbia	1	5	.....
Tennessee:			
Knoxville	(1)	2	2
Utah:			
Salt Lake City	2	2	1
Virginia:			
Petersburg	0	1	.....
Richmond	3	3	.....
Washington:			
Aberdeen	.....	1	.....
Bellingham	0	1	.....
Spokane	.....	1	.....
West Virginia:			
Bluefield	1	1	.....
Parkersburg	0	1	.....
Wisconsin:			
Marinette	(1)	1	.....
Sheboygan	.....	1	.....

[1] Average less than 1.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

City Reports for Week Ended Nov. 6, 1920.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Aberdeen, Wash	21,392	.....	.....	.....	.....	.....	1	.....	.....	.....
Adams, Mass	14,406	.....	1	.....	3	.....	.....	.....	.....	.....
Akron, Ohio	93,604	37	3	.....	1	.....	11	.....	1	.....
Alameda, Calif	28,433	1	4	.....	1	.....	.....	.....	1	.....
Albany, N. Y	106,632	.....	7	.....	7	.....	1	.....	3	.....
Albuquerque, N. Mex	14,509	11	1	.....	6	.....	.....	.....	7	7
Alexandria, Va	17,959	8	.....	.....	.....	.....	2	.....	.....	.....
Alliance, Ohio	19,581	.....	1	.....	.....	.....	3	.....	.....	.....
Alton, Ill	23,783	2	1	.....	.....	.....	1	.....	.....	.....
Amesbury, Mass	10,200	0	1	.....	1	.....	1	.....	.....	.....
Anaconda, Mont	10,631	4	1	.....	.....	.....	.....	.....	.....	.....
Ann Arbor, Mich	15,041	16	2	.....	1	.....	.....	.....	.....	1
Anniston, Ala	14,326	.....	1	.....	.....	.....	1	.....	.....	.....
Appleton, Wis	18,005	.....	.....	.....	.....	.....	3	.....	.....	.....
Arlington, Mass	13,073	4	1	.....	1	.....	2	.....	.....	.....
Asbury Park, N. J	14,629	1	.....	.....	.....	.....	.....	.....	.....	.....
Ashtabula, Ohio	22,008	2	2	.....	.....	.....	1	.....	.....	.....
Atchison, Kans	16,785	.....	10	.....	.....	.....	5	.....	.....	.....
Atlanta, Ga	197,144	61	12	1	2	.....	7	.....	1	7
Atlantic City, N. J	55,515	10	2	.....	.....	.....	2	.....	3	1
Attleboro, Mass	19,776	4	.....	.....	.....	.....	1	.....	.....	1
Auburn, Me	16,607	5	.....	.....	.....	.....	.....	.....	.....	.....
Auburn, N. Y	37,823	9	2	.....	.....	.....	1	.....	1	.....
Austin, Tex	35,612	20	3	1	.....	.....	.....	.....	.....	2
Baltimore, Md	594,637	168	41	.....	10	.....	9	.....	22	20
Bangor, Me	26,958	.....	.....	.....	10	.....	1	.....	.....	.....
Barberton, Ohio	14,187	3	1	.....	.....	.....	.....	.....	.....	.....
Baton Rouge, La	17,544	10	2	.....	.....	.....	4	.....	1	1
Battle Creek, Mich	30,159	.....	6	2	.....	.....	11	.....	.....	.....
Bayonne, N. J	72,204	.....	11	.....	1	.....	.....	.....	1	.....
Beacon, N. Y	11,674	3	.....	.....	.....	.....	.....	.....	.....	1
Beatrice, Nebr	10,437	7	.....	.....	.....	.....	.....	.....	.....	1
Beaumont, Tex	28,851	6	3	1	.....	.....	.....	.....	.....	.....
Bedford, Ind	10,613	4	.....	.....	.....	.....	1	.....	.....	.....
Belleville, N. J	12,797	.....	2	.....	.....	.....	.....	.....	.....	.....
Bellingham, Wash	34,362	.....	1	.....	.....	.....	.....	.....	.....	.....
Beloit, Wis	18,547	7	.....	.....	.....	.....	.....	.....	.....	1
Benton Harbor, Mich	11,099	6	2	.....	.....	.....	1	.....	.....	.....
Berlin, N. H	13,892	8	.....	.....	4	1	.....	.....	.....	.....
Beverly, Mass	22,128	3	.....	.....	.....	.....	.....	.....	2	.....
Biddeford, Me	17,700	.....	3	.....	2	.....	.....	.....	1	.....
Billings, Mont	15,123	7	.....	.....	10	.....	2	.....	.....	.....
Birmingham, Ala	189,716	39	4	1	.....	.....	3	.....	2	4
Bloomfield, N. J	19,013	3	1	.....	.....	.....	5	.....	1	.....
Bloomington, Ill	27,462	7	1	.....	.....	.....	2	.....	3	.....
Bloomington, Ind	11,661	.....	.....	.....	.....	.....	3	.....	.....	.....
Bluefield, W. Va	16,123	.....	5	.....	.....	.....	2	.....	.....	.....
Boise, Idaho	35,951	4	.....	.....	1	.....	.....	.....	.....	.....
Boston, Mass	767,813	184	41	.....	7	.....	24	2	51	16
Brazil, Ind	10,472	3	.....	.....	.....	.....	.....	.....	.....	.....
Bridgeport, Conn	124,724	25	11	.....	2	.....	8	.....	2	2
Bristol, Conn	16,318	3	1	.....	.....	.....	.....	.....	1	.....
Brockton, Mass	69,152	14	2	.....	.....	.....	5	.....	4	2
Brookline, Mass	33,526	5	3	.....	.....	.....	1	.....	1	.....
Brunswick, Ga	10,984	4	1	.....	.....	.....	.....	.....	.....	.....
Buffalo, N. Y	475,781	116	95	12	81	.....	11	.....	19	7
Burlington, Iowa	25,144	.....	1	.....	1	.....	1	.....	.....	.....
Burlington, Vt	21,802	7	1	.....	1	.....	1	.....	.....	1
Butte, Mont	41,057	12	.....	.....	121	1	.....	.....	6	3
Cambridge, Mass	114,293	27	3	.....	1	.....	5	.....	6	2
Canton, Ill	13,674	5	.....	.....	.....	.....	.....	.....	.....	.....
Canton, Ohio	62,566	17	16	.....	3	.....	4	.....	.....	.....
Cape Girardeau, Mo	11,146	2	1	1	.....	.....	2	.....	.....	1
Cedar Rapids, Iowa	38,033	.....	8	.....	.....	.....	.....	.....	.....	.....
Centralia, Ill	11,838	4	1	.....	.....	.....	.....	.....	.....	.....
Chanute, Kans	12,968	1	.....	.....	.....	.....	.....	.....	.....	.....
Charleston, S. C	61,041	24	3	.....	.....	.....	.....	.....	3	4
Charleston, W. Va	31,060	.....	4	.....	2	.....	1	.....	.....	.....
Charlotte, N. C	40,759	22	6	.....	20	.....	.....	.....	5	4
Chelsea, Mass	48,405	4	2	.....	12	.....	.....	.....	2	.....

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cheyenne, Wyo.	[1] 11,320	5							2	2
Chicago, Ill.	2,547,201	518	245	16	41	1	123	2	169	32
Chicopee, Mass.	29,950	4	2						1	
Cincinnati, Ohio.	414,248	103	23	1	2		21		18	11
Cleveland, Ohio.	692,259	185	41		10		68	3		14
Clinton, Iowa.	27,678						1			
Clinton, Mass.	[1] 13,075	3			30				1	
Coffeyville, Kans.	18,331	3	2				7			1
Cohoes, N. Y.	25,292	3			64					
Columbia, S. C.	35,165		4				2			
Columbus, Ohio.	220,135	64	13		1		10		4	5
Council Bluffs, Iowa.	31,838	3	1				6			1
Cranston, R. I.	26,773	4					1			
Crawfordsville, Ind.	11,443						2			
Cumberland, Md.	26,686	8	2	1			4		2	1
Dallas, Tex.	129,738	42	35	1	1		7		4	5
Danvers, Mass.	10,037		1						2	
Danville, Ill.	32,969	14					1		2	
Danville, Va.	20,183		2				2			
Davenport, Iowa.	49,618						1			
Dayton, Ohio.	128,939	31	10				9		1	
Decatur, Ill.	41,483	10	7							2
Dedham, Mass.	10,618	2								
Denver, Colo.	268,439	72	5	1	40		5			8
Des Moines, Iowa.	104,052		4	1			4			
Detroit, Mich.	619,648	183	121	4		1	81	2	30	14
Dover, N. H.	13,276	6								
Dubuque, Iowa.	40,096		2		1		2			
Duluth, Minn.	97,077	13	6		1		4		3	1
Durham, N. C.	26,160	8	6				3			2
East Cleveland, Ohio.	13,864		4							5
Easthampton, Mass.	10,656		1							
East Providence, R. I.	18,485		1		1		1			
East St. Louis, Ill.	77,312	20	8				2			1
Eau Claire, Wis.	18,887		1				2			
Elgin, Ill.	28,562	6	2		2		2			
Elizabeth, N. J.	88,830	24	6				2	1	3	1
Elkhart, Ind.	22,273				1		1			
Elmira, N. Y.	38,272	11								
El Paso, Tex.	69,149	32		1						8
Elwood, Ind.	[1] 11,028	4								
Englewood, N. J.	12,603	2							1	
Evanston, Ill.	29,304	5	9				3			
Everett, Mass.	40,160	8	3		1				1	1
Fairmont, W. Va.	16,111		1							
Fall River, Mass.	129,828	30	12	3	16				8	2
Fargo, N. Dak.	17,872	5	1				2			
Findlay, Ohio.	[1] 14,858	4								
Flint, Mich.	57,386	18	12				4			
Fond du Lac, Wis.	21,486		5							
Fort Scott, Kans.	10,564	2	17	1						
Fort Smith, Ark.	29,390						4		1	
Fort Wayne, Ind.	78,014	14	2		3		2			
Fort Worth, Tex.	109,597	20	4				2			1
Fostoria, Ohio.	10,959	3	5				2			
Framingham, Mass.	14,149	5					1		2	
Frankfort, Ind.	10,103	0								
Freeport, Ill.	19,844	7	4	1			1		1	
Galesburg, Ill.	24,629	6	1		1					
Galveston, Tex.	42,650	21								
Gardner, Mass.	17,534						3		1	
Gary, Ind.	56,000	7	8		1					
Geneva, N. Y.	13,915	7								1
Glens Falls, N. Y.	17,160	4							1	
Gloucester City, N. J.	11,375		1							
Grand Forks, N. Dak.	16,342	0	20				1			
Grand Rapids, Mich.	132,861	32	35	1	2		8		5	1
Granite City, Ill.	15,890	7	3	1						
Great Falls, Mont.	[1] 13,948	4	1		2		7		2	
Greeley, Colo.	11,942	3								
Green Bay, Wis.	30,017	4	2		2		2			
Greenfield, Mass.	12,251	4	1				4			

[1] Population, April 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Greensboro, N. C.	20,171	4								1
Hackensack, N. J.	17,412									1
Hammond, Ind.	27,016	14	9	1	1		5			
Hannibal, Mo.	22,399		3	1			4			
Harrison, N. J.	17,345		3							
Hartford, Conn.	112,831	32	37	2			12		4	2
Haverhill, Mass.	49,180	15	6				3			1
Hibbing, Minn.	17,550		3				3			
Highland Park, Mich.	33,859	9	7		3		3			
Hoboken, N. J.	78,324	18	2							
Holyoke, Mass.	66,503	10	3				1			1
Hot Springs, Ark.	17,690	5	2							
Hudson, N. Y.	12,898	2								
Huntington, Ind.	10,982	0					3			
Huntington, W. Va.	47,686	18	3				3			1
Hutchinson, Kans.	21,461		6				2		1	
Independence, Mo.	11,964	7	2							
Indianapolis, Ind.	283,622	65	9		7		10		7	6
Ironwood, Mich.	15,095	3			1					
Irvington, N. J.	16,710						2			
Ishpeming, Mich.	[1] 12,448		1		1		3	2		1
Ithaca, N. Y.	16,017	2	1							
Jacksonville, Ill.	15,506	8								
Jamestown, N. Y.	37,431	8	2				3		4	
Janesville, Wis.	14,411	2					3			
Jefferson City, Mo.	13,712	6								
Jersey City, N. J.	312,557		18				8		11	
Joplin, Mo.	33,400		2				4			
Kalamazoo, Mich.	50,408	17			2		10		2	
Kansas City, Kans.	102,096		16		1		6		7	
Kansas City, Mo.	305,816	72	25	1	4		14		2	3
Kearny, N. J.	24,325	2	4		1		1		1	1
Keene, N. H.	10,725	2								
Kenosha, Wis.	32,833	8	1				2			1
Kewanee, Ill.	13,607	7					6			1
Knoxville, Tenn.	59,112		6	1			1		1	1
Kokomo, Ind.	21,929	6							1	
La Crosse, Wis.	31,833						2			
La Fayette, Ind.	21,481	5					2			
Lake Charles, La.	14,930	2								
Lancaster, Ohio.	16,096	5					2		1	
La Salle, Ill.	12,332	0					1		1	
Lawrence, Kans.	13,477	2					1		1	
Leavenworth, Kans.	[1] 19,363	3	1							
Leominster, Mass.	21,365	4					1		2	
Lewiston, Me.	28,051	6	2		6					
Lexington, Ky.	41,997	16	4				2		2	1
Lima, Ohio.	37,145	14	1		1		3			2
Lincoln, Nebr.	46,957	10								1
Lincoln, R. I.	10,473		1							
Little Rock, Ark.	58,716		12		20				3	
Lockport, N. Y.	20,028	3					1			
Logansport, Ind.	21,338	9								2
Long Beach, Calif.	29,163	12	1							
Lorain, Ohio.	38,266		7		1					
Los Angeles, Calif.	535,485	131	44	2	23	1	9	1	73	13
Louisville, Ky.	240,808	59	9	1			5		9	7
Lowell, Mass.	114,366	34	7		81	3	5		3	1
Lynchburg, Va.	33,497	10	6							
Lynn, Mass.	101,534	22	5		2		4			1
Macon, Ga.	46,099		7				3			
Madison, Wis.	31,315	12	2				2		1	1
Malden, Mass.	52,243	13	2				5	1		1
Manchester, Conn.	15,859		1				1			
Manchester, N. H.	79,607	17	28	1						
Mankato, Minn.	[1] 10,385	5					1			
Mansfield, Ohio.	25,051	4	1				1			
Marion, Ind.	19,923	7					1		1	1
Marquette, Mich.	12,555	1	1		1					
Marshalltown, Iowa.	14,519		1				1			
Martins Ferry, Ohio.	10,135	4					4			
Mason City, Iowa.	14,938	1	1				2			

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Mattoon, Ill.	12,764	.....	.....	.....	.....	.....	1	.....	9	.....
Medford, Mass.	26,681	8	.....	.....	.....	.....	1	.....	2	.....
Melrose, Mass.	17,724	2	.....	.....	.....	.....	.....	.....	.....	.....
Memphis, Tenn.	151,877	54	43	.....	.....	.....	5	.....	8	5
Meriden, Conn.	[1] 29,431	.....	3	.....	.....	.....	1	.....	2	1
Methuen, Mass.	11,320	3	3	1	18	.....	.....	.....	.....	.....
Middletown, N. Y.	15,860	.....	2	.....	10	.....	5	.....	1	.....
Middletown, Ohio.	16,384	4	.....	.....	.....	.....	1	.....	1	.....
Milwaukee, Wis.	445,008	82	64	5	6	1	22	.....	13	1
Minneapolis, Minn.	373,448	83	15	.....	1	.....	26	.....	11	8
Mishawaka, Ind.	17,083	4	1	.....	.....	.....	4	.....	.....	.....
Missoula, Mont.	19,075	1	1	.....	.....	.....	.....	.....	.....	.....
Mobile, Ala.	59,201	20	3	.....	.....	.....	.....	.....	.....	1
Monmouth, Ill.	10,346	1	.....	.....	.....	.....	.....	.....	.....	.....
Monroe, La.	13,698	10	5	1	.....	.....	.....	.....	.....	1
Montclair, N. J.	27,087	3	2	.....	3	.....	3	.....	.....	.....
Montgomery, Ala.	44,039	10	3	.....	.....	.....	3	.....	.....	.....
Morgantown, W. Va.	14,444	11	1	.....	.....	.....	2	.....	.....	.....
Morristown, N. J.	13,410	5	.....	.....	.....	.....	.....	.....	.....	.....
Moundsville, W. Va.	11,515	2	1	.....	.....	.....	1	.....	.....	.....
Mount Vernon, N. Y.	37,991	3	6	.....	.....	.....	.....	.....	.....	.....
Muncie, Ind.	25,653	5	6	1	.....	.....	7	.....	1	.....
Muscatine, Iowa	17,713	3	.....	.....	.....	.....	.....	.....	.....	.....
Muskegon, Mich.	27,434	5	1	.....	.....	.....	4	.....	.....	.....
Nashville, Tenn.	118,136	33	11	.....	.....	.....	5	.....	1	3
Newark, N. J.	418,789	6	.....	.....	.....	.....	1	.....	.....	.....
New Bedford, Mass.	121,622	33	6	.....	1	.....	3	.....	2	.....
New Britain, Conn.	55,385	7	18	.....	2	.....	4	.....	.....	.....
New Brunswick, N. J.	25,855	.....	1	.....	.....	.....	.....	.....	.....	.....
Newburgh, N. Y.	29,893	7	1	.....	.....	.....	1	.....	.....	.....
Newburyport, Mass.	15,291	4	.....	.....	1	.....	.....	.....	1	.....
New Haven, Conn.	152,275	33	13	.....	.....	.....	11	.....	8	2
New London, Conn.	21,199	5	2	.....	.....	.....	2	.....	1	.....
New Orleans, La.	377,010	124	12	1	13	.....	5	.....	24	12
New Philadelphia, Ohio.	10,133	.....	.....	.....	.....	.....	1	.....	.....	.....
Newport, R. I.	30,585	4	.....	.....	.....	.....	2	.....	.....	1
Newton, Mass.	44,345	.....	3	1	88	.....	2	.....	2	.....
New York, N. Y.	5,737,492	1,114	261	6	40	.....	105	2	[2] 235	[2] 104
Niagara Falls, N. Y.	38,466	8	16	.....	.....	.....	21	.....	2	1
Norfolk, Va.	91,148	.....	6	1	2	.....	1	.....	3	5
North Adams, Mass.	[1] 22,019	6	1	.....	3	.....	.....	.....	1	.....
Northampton, Mass.	20,006	10	6	.....	.....	.....	.....	.....	.....	.....
North Little Rock, Ark.	15,515	5	2	.....	.....	.....	3	.....	.....	.....
Norwalk, Conn.	27,332	6	1	1	1	.....	.....	.....	.....	.....
Norwich, Conn.	21,923	4	1	.....	.....	.....	.....	.....	2	.....
Oakland, Calif.	206,405	37	8	.....	.....	.....	3	1	1	3
Oak Park, Ill.	27,816	10	1	.....	.....	.....	3	.....	1	.....
Oklahoma City, Okla.	97,588	19	22	1	.....	.....	6	.....	3	1
Olean, N. Y.	16,927	4	1	.....	1	.....	.....	.....	2	.....
Omaha, Nebr.	177,777	34	23	2	.....	.....	2	.....	.....	4
Orange, N. J.	33,636	9	12	.....	1	.....	.....	.....	2	1
Oshkosh, Wis.	36,549	4	.....	.....	.....	.....	1	.....	.....	.....
Paducah, Ky.	25,178	.....	4	.....	.....	.....	1	.....	.....	.....
Parkersburg, W. Va.	21,059	5	.....	.....	.....	.....	.....	.....	.....	.....
Parsons, Kans.	15,952	.....	4	.....	.....	.....	2	.....	.....	.....
Pasadena, Calif.	49,620	7	2	.....	.....	.....	1	.....	2	.....
Passaic, N. J.	74,478	19	4	.....	3	.....	4	.....	.....	1
Paterson, N. J.	140,512	.....	6	.....	.....	.....	4	.....	.....	.....
Pawtucket, R. I.	60,666	13	1	.....	.....	.....	.....	.....	.....	.....
Peekskill, N. Y.	19,034	7	2	.....	.....	.....	.....	1	.....	.....
Pekin, Ill.	10,973	.....	.....	.....	.....	.....	1	.....	2	.....
Peoria, Ill.	72,184	21	11	.....	.....	.....	17	.....	.....	1
Petersburg, Va.	25,817	13	8	.....	.....	.....	.....	.....	1	1
Philadelphia, Pa.	1,735,514	409	63	5	7	.....	95	1	55	36
Phillipsburg, N. J.	15,879	7	1	1	.....	.....	.....	.....	1	1
Piqua, Ohio.	14,275	4	.....	.....	.....	.....	.....	.....	.....	.....
Pittsfield, Mass.	39,678	10	2	.....	23	.....	3	.....	2	.....
Plainfield, N. J.	24,330	11	.....	.....	.....	.....	1	.....	2	.....
Pontiac, Mich.	18,006	13	.....	.....	.....	.....	5	.....	.....	1
Port Chester, N. Y.	16,727	4	6	.....	.....	.....	.....	.....	.....	.....
Port Huron, Mich.	[1] 18,863	11	.....	.....	.....	.....	.....	.....	1	.....

[1] Population Apr. 15, 1910.

[2] Pulmonary tuberculosis only.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Portland, Me.	64,720	22	2	.....	5	.....	3	.....	.....	.....
Portland, Oreg.	308,399	50	17	.....	13	.....	4	.....	6	3
Poughkeepsie, N. Y.	30,786	5	2	.....	.....	.....	.....	.....	.....	1
Providence, R. I.	259,895	51	14	1	6	.....	2	.....	.....	4
Pueblo, Colo.	56,084	11	6	.....	2	.....	2	.....	.....	.....
Quincy, Ill.	36,832	9	1	.....	.....	.....	2	.....	.....	.....
Quincy, Mass.	39,022	8	18	.....	1	.....	.....	.....	1	.....
Racine, Wis.	47,465	7	.....	.....	.....	.....	6	.....	.....	.....
Rahway, N. J.	10,361	3	.....	.....	.....	.....	2	.....	.....	.....
Raleigh, N. C.	20,274	13	4	.....	10	.....	2	.....	.....	.....
Redlands, Calif.	14,573	2	.....	.....	.....	.....	.....	.....	.....	.....
Reno, Nev.	15,514	2	.....	.....	.....	.....	.....	.....	.....	.....
Richmond, Ind.	25,080	10	3	.....	.....	.....	.....	.....	.....	1
Richmond, Va.	158,702	52	42	1	.....	.....	8	.....	9	2
Riverside, Calif.	20,496	4	1	.....	1	.....	.....	.....	1	.....
Roanoke, Va.	46,282	5	6	.....	1	.....	4	.....	1	.....
Rochester, N. Y.	261,714	74	46	5	5	.....	15	.....	12	4
Rockford, Ill.	56,739	13	.....	.....	.....	.....	2	.....	.....	.....
Rock Island, Ill.	29,452	9	.....	.....	1	.....	.....	.....	.....	.....
Rocky Mount, N. C.	12,673	4	.....	.....	.....	.....	.....	.....	.....	.....
Rome, Ga.	15,607	.....	2	.....	.....	.....	.....	.....	.....	.....
Rome, N. Y.	24,259	.....	.....	.....	8	.....	.....	.....	.....	.....
Rutland, Vt.	15,038	6	.....	.....	.....	.....	.....	.....	.....	.....
Sacramento, Calif.	68,984	21	3	.....	.....	.....	1	.....	7	4
St. Joseph, Mo.	88,498	23	3	.....	1	.....	4	.....	.....	1
St. Louis, Mo.	768,630	179	164	3	2	.....	21	.....	25	6
St. Paul, Minn.	252,465	57	20	2	.....	.....	8	.....	5	6
Salina, Kans.	12,470	2	1	.....	.....	.....	1	.....	.....	.....
Salt Lake City, Utah	121,623	23	.....	.....	53	.....	1	.....	.....	.....
San Bernardino, Calif.	17,616	13	.....	1	.....	.....	.....	.....	.....	3
San Diego, Calif.	56,412	18	1	.....	1	.....	2	.....	8	2
Sandusky, Ohio.	20,226	7	.....	.....	.....	.....	.....	.....	1	1
Sanford, Me.	11,217	3	.....	.....	.....	.....	.....	.....	.....	1
San Francisco, Calif.	471,023	129	26	3	1	.....	10	.....	15	13
San Jose, Calif.	39,810	.....	1	.....	.....	.....	3	.....	.....	.....
Santa Cruz, Calif.	15,150	.....	.....	.....	.....	.....	.....	.....	.....	1
Saratoga Springs, N. Y.	13,839	7	.....	.....	.....	.....	.....	.....	.....	1
Saugus, Mass.	10,210	2	.....	.....	.....	.....	1	.....	.....	.....
Sault Ste. Marie, Mich.	14,130	4	.....	.....	.....	.....	1	.....	.....	.....
Savannah, Ga.	69,250	29	6	.....	.....	.....	1	.....	2	4
Schenectady, N. Y.	103,774	10	7	.....	3	.....	2	.....	2	.....
Sheboygan, Wis.	28,907	6	.....	.....	1	.....	.....	.....	.....	.....
Sioux City, Iowa.	58,588	.....	1	.....	.....	.....	2	.....	.....	.....
Sioux Falls, S. Dak.	16,887	6	1	.....	.....	.....	2	.....	.....	.....
Somerville, Mass.	88,618	23	5	1	.....	.....	2	.....	3	1
South Bend, Ind.	70,967	8	6	.....	.....	.....	4	.....	.....	1
Southbridge, Mass.	14,465	2	.....	.....	.....	.....	.....	.....	.....	.....
Spartanburg, S. C.	21,985	5	6	.....	.....	.....	1	.....	.....	.....
Spokane, Wash.	157,656	.....	3	.....	.....	.....	1	.....	.....	.....
Springfield, Ill.	62,623	12	1	1	4	.....	19	.....	2	1
Springfield, Mass.	108,668	31	7	.....	.....	.....	9	2	1	2
Springfield, Ohio.	52,296	14	1	.....	3	.....	5	.....	4	1
Steubenville, Ohio.	28,259	6	1	.....	.....	.....	1	.....	1	.....
Stillwater, Minn.	[1] 10,198	1	.....	.....	.....	.....	.....	.....	.....	.....
Superior, Wis.	47,167	7	11	.....	.....	.....	4	.....	2	.....
Syracuse, N. Y.	158,559	11	27	.....	4	.....	8	.....	4	.....
Tacoma, Wash.	117,446	.....	1	.....	1	.....	1	.....	.....	.....
Taunton, Mass.	36,610	6	1	.....	8	.....	3	.....	2	1
Terre Haute, Ind.	67,351	18	8	2	.....	.....	3	.....	.....	1
Tiffin, Ohio.	12,962	3	.....	1	.....	.....	.....	.....	.....	.....
Toledo, Ohio.	202,010	59	47	2	1	.....	15	.....	.....	7
Topeka, Kans.	49,538	16	2	.....	35	.....	5	.....	7	.....
Trenton, N. J.	113,974	20	7	.....	.....	.....	.....	.....	3	1
Trinidad, Colo.	14,413	.....	1	.....	6	.....	1	.....	.....	.....
Troy, N. Y.	78,094	23	.....	.....	5	.....	1	.....	7	1
Tucson, Ariz.	17,324	6	.....	.....	.....	.....	.....	.....	.....	2
Vancouver, Wash.	13,805	.....	1	.....	.....	.....	2	.....	.....	.....
Waco, Tex.	34,015	11	6	.....	.....	.....	.....	.....	.....	.....
Wakefield, Mass.	12,947	.....	.....	.....	.....	.....	.....	.....	.....	.....
Walla Walla, Wash.	26,067	.....	1	.....	.....	.....	.....	.....	1	.....
Waltham, Mass.	31,011	5	1	.....	6	.....	.....	.....	.....	1

[1] Population Apr. 15, 1910.

DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Continued.

City Reports for Week Ended Nov. 6, 1920—Continued.

City.	Population as of July 1, 1917 (estimated by U. S. Census Bureau).	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Warwick, R. I.	13,302	.....	.....	.....	.....	.....	.....	.....	2	.....
Washington, D. C.	369,282	97	.....	.....	18	.....	11	.....	18	14
Watertown, Mass.	15,188	3	.....	.....	1	.....	.....	.....	1	1
Waterville, Me.	12,903	.....	4	.....	.....	.....	.....	.....	.....	.....
Wausau, Wis.	19,666	5	.....	.....	.....	.....	1	.....	.....	.....
Westfield, Mass.	18,709	8	.....	.....	.....	.....	.....	.....	.....	.....
West Hoboken, N. J.	44,386	5	.....	.....	.....	.....	.....	.....	1	.....
West New York, N. J.	19,613	4	5	.....	.....	.....	.....	.....	.....	.....
West Orange, N. J.	13,564	4	3	.....	1	.....	1	.....	1	2
Wheeling, W. Va.	43,657	13	14	1	2	.....	2	.....	1	2
White Plains, N. Y.	23,331	3	.....	.....	.....	.....	.....	.....	.....	1
Wichita, Kans.	73,507	24	21	.....	.....	.....	14	1	4	1
Wilmington, Del.	95,369	20	1	.....	.....	.....	1	2	.....	.....
Wilmington, N. C.	30,400	10	4	.....	.....	.....	1	.....	.....	1
Winona, Minn.	[1]18,583	.....	.....	.....	.....	.....	4	.....	.....	.....
Winston-Salem, N. C.	33,136	17	1	.....	.....	.....	2	.....	3	3
Woburn, Mass.	16,076	.....	.....	.....	.....	.....	.....	.....	.....	2
Worcester, Mass.	166,106	41	6	.....	4	.....	6	.....	2	2
Yakima, Wash.	22,058	.....	.....	.....	.....	.....	3	.....	.....	.....
Yonkers, N. Y.	103,066	23	10	.....	.....	.....	.....	.....	1	4
Youngstown, Ohio.	112,282	27	7	1	.....	.....	11	.....	3	3
Zanesville, Ohio.	31,320	8	1	.....	.....	.....	2	.....	.....	1

[1] Population Apr. 15, 1910.

FOREIGN AND INSULAR.

SMALLPOX ON VESSEL.

Steamship "Bradford"—Vancouver, British Columbia.

The steamship *Bradford* from ports in Chile, Mexico, and Peru arrived at Vancouver, British Columbia, November 4, 1920, with a case of smallpox on board among the crew. The *Bradford* left the port of Talara, Peru, approximately 21 days before arrival at Vancouver. The vessel sailed from Vancouver for San Francisco, Calif., arriving November 9, 1920.

AUSTRALIA.

Influenza—Melbourne—1919.

Epidemic influenza of the pneumonic type appeared suddenly at Melbourne, Australia, January 24, 1919. The prevalence of the disease increased rapidly, and for the week ended February 15, 1919, a daily average of 80 cases was reported. A gradual subsidence then occurred, lasting until the week ended March 21, 1919, when the daily average was reported at 18 cases. After that date a rapid increase was noted to the week ended April 26, when the daily average was reported as 106 cases. During May and June a second decline was noted. In July, cases began again to be numerous, and during the week ended July 19 the reported daily average was 82. A rapid decline occurred in August and September, 1919, and in October the disease practically disappeared. On October 17, 1919, notification of cases of influenza was suspended. The total number of cases reported was 8,678, equivalent to an attack rate of 81.73 per 1,000. These figures were stated to be only approximately correct. The deaths numbered 464, equivalent to a rate of 4.37 per 1,000 of the population, which was estimated in 1919 as 106,180. The following table shows the deaths at the various age groups, 273 of the deaths being of males and 191 of females:

Age (years).	Male.	Female.	Age (years).	Male.	Female.
Under 1	2	5	20–25	20	10
1	2	3	25–35	92	65
2	1	2	35–45	66	48
3		2	45–55	52	17
4		2	55 and over	23	25
5–10	5	3			
10–15	2	2	Total	273	191
15–20	8	7			

CANARY ISLANDS.

Plague-Infected Rodent—Las Palmas.

During the week ended October 16, 1920, a plague-infected rodent was reported found at Las Palmas, Canary Islands.

CUBA.

Communicable Diseases—Habana.

Communicable diseases have been notified at Habana as follows:

Disease.	Oct. 21–31, 1920.		Remaining under treatment Oct. 21, 1920.	Disease.	Oct. 21–31, 1920.		Remaining under treatment Oct. 21, 1920.
	New cases.	Deaths.			New cases.	Deaths.	
Cerebrospinal meningitis	.....	.....	1	Measles	15	1	13
Chicken pox	1	.....	1	Paratyphoid fever	1	.....	1
Diphtheria	2	1	1	Scarlet fever	.....	.....	1
Leprosy	.....	.....	11	Smallpox	.....	.....	[2] 1
Malaria	45	2	[1] 73	Typhoid fever	25	5	[3] 65

[1] From the interior 43; from abroad 1.
[2] From abroad 1.
[3] From the interior 27; from abroad 4.

FINLAND.

Influenza—July 16–31, 1920.[1]

During the period July 16 to 31, 1920, 271 cases of influenza were reported in Finland. The cases were distributed by provinces as follows: Abo och Borneborg, 15 (urban, 8); Kuopio, 29 (urban, 24); Nyland, 86 (urban, 49); St. Michael, 34 (urban, 1); Tavastehus, 70 (urban, 10); Vasa, 18 (urban, 2); Viborg, 11 (urban, 11); Uleaborg, 8. The officially estimated population of Finland is stated to be 3,331,814.

PORTO RICO.

Influenza.

During the week ended October 31, 1920, seven cases of influenza with one fatality were notified in Porto Rico. Of these, one case occurred at Humacao and six cases at San German.

[1] Public Health Reports, Oct. 22, 1920, p. 2537.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.

Reports Received During Week Ended Nov. 26, 1920.[1]

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Changsha	Sept. 25–Oct. 9			Present.
Chungking	Oct. 3–9			Present. Also present at localities in vicinity.
Chosen (Korea):				
Seoul	Oct. 15–22		11	
India:				
Bombay	Sept. 12–18	2	2	
Calcutta	Sept. 26–Oct. 2	13	13	
Madras	Oct. 3–9	1	2	
Japan:				
Taiwan Island (Formosa)	Oct. 1–10	221	113	
Philippine Islands:				
Province—				
Tarlac	Sept. 12–18	1	1	

PLAGUE.

Egypt				Jan. 1–Oct. 14, 1920: Cases, 430; deaths, 251.
Cities—				
Alexandria	Oct. 9	1		
Provinces—				
Garbieh	Oct. 9–11	2	3	
India				Sept. 19–25, 1920: Cases, 2,347; deaths, 1,764.
Bombay	Oct. 12–25	4	1	
Karachi	Oct. 3–9	1	1	
Madras Presidency	do	658	438	
Rangoon	Sept. 19–25	10	9	
Java:				
West Java				Sept. 18–23, 1920; Cases, 1; deaths, 1.
Batavia	Sept. 18–23	1	1	

SMALLPOX.

Canada:				
New Brunswick—				
Counties—				
Madawaska	Oct. 31–Nov. 6	1		
Restigouche	do	3		
Ontario—				
Ottawa	Nov. 7–13	52		
Saskatchewan—				
Regina	Oct. 24–30	1		
Saskatoon	Oct. 31–Nov. 6	1		
China:				
Amoy	Sept. 26–Oct. 9		4	
Canton				Sept. 1–30, 1920: Present.
Chungking	Oct. 3–9			Present.
Dairen	Sept. 28–Oct. 4	1		
Nanking	Oct. 10–16			Do.
Great Britain:				
Glasgow	Oct. 17–23	6		
India:				
Madras	Oct. 3–9	3	2	
Rangoon	do	2		
Java:				
East Java—				
Surabaya	Sept. 5–11	1		
West Java				Sept. 17–23, 1920: Cases, 52; deaths, 8.
Batavia	Sept. 17–23	5	3	
Madeira:				
Funchal	Oct. 18–23		1	
Portuguese East Africa:				
Lourenco Marques	Sept. 19–25	4		
Sierra Leone:				
Baktau	Sept. 1–30	2		
Freetown	do	3		
Sweden:				
Stockholm	Oct. 3–9	2		
Tunis:				
Tunis	Oct. 18–24	4	1	
Union of South Africa:				
East London	Sept. 19–25	1		
On vessel.				
S. S. Bradford	Nov. 4	1		At Vancouver, British Columbia.

[1] From medical officers of the Public Health Service, American consuls, and other sources.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received During Week Ended Nov. 26, 1920—Continued.

TYPHUS FEVER.

Place.	Date.	Cases.	Deaths.	Remarks.
Belgium:				
Ghent	Oct. 17-23	1		
China:				
Antung	Oct. 4-17	13	2	
Japan:				
Nagasaki	Oct. 10-16	2	1	
Portugal:				
Oporto	Oct. 18-23	2	1	
Russia:				
Riga	Sept. 24-30	16		

Reports Received from June 26 to Nov. 19, 1920.

CHOLERA.

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Rio de Janeiro	June 27-July 3		1	
China:				
Amoy	June 29-Aug. 14		12	
Antung	Aug. 9-15	1	1	
Canton	July 1-Aug. 31	5	4	
Changsha	Aug. 22-Sept. 18	137	50	Aug. 15-21: Present.
Chungking	May 16-24		1,319	
Do	June 6-Sept. 11		5,322	Sept. 18: Present.
Dairen	Sept. 29	4	1	
Foochow	July 11-24			Present.
Hankow	July 4-17	12	5	
Harbin				Year 1919: Cases, 603. On Eastern Chinese R. R. line. At other stations, same line, 190 cases.
Hongkong	Aug. 8-14	1	1	
Nanking	Sept. 12-25		4	Several cases reported at Nanking University, Aug. 30. Reported prevalent among Chinese, Aug. 30.
Shanghai	Aug. 2-29	1	6	
Chosen (Korea)				Sept. 8, 1920: Cases, 13,000; deaths, 5,000 (estimated). Aug. 1-Oct. 7, 1920: Cases, 24,535, deaths, 12,549.
Chemulpo	Aug. 1-Oct. 7	24	21	
Chinnampo	Aug. 1-26	34	23	
Fusan	Aug. 1-Oct. 7	684	493	
Gensan	Aug. 27-Sept. 2	1		
Mokpo	Aug. 1-Sept. 30	28	18	
Seoul	Aug. 1-Oct. 7	1,032	781	
Galicia:				
Buczacz	Oct. 18			Present.
Greece:				
Patras	July 25-Aug. 1			Present in surrounding country.
Zante	Aug. 2-8			Present.
India				Apr. 11-May 22, 1920: Deaths, 7,549. May 30-June 26, 1920: Deaths, 3,710. June 27-July 10, 1920: Deaths, 1,711.
Bombay	May 2-June 26	85	36	
Do	June 27-Sept. 11	103	66	
Calcutta	May 2-June 24	430	423	
Do	July 18-Sept. 18	175	168	
Madras	May 2-June 26	20	13	
Do	July 11-Oct. 2	12		
Rangoon	June 27-Sept. 18	22	16	
Indo-China				1920: Jan.—Cases, 40; deaths, 24. Feb.—Cases, 25; deaths, 15. Mar.—Cases, 52; deaths, 30. Apr.—Cases, 204; deaths, 99. May—Cases, 328; deaths, 184.
Saigon	Apr. 25-June 13	130	94	
Do	July 25-Sept. 5	9	5	
Japan:				
Kobe	June 14-27	36	24	Kobe, June 6-13, 34 cases. Moji, June 6-12, 10 cases. Koepi, June 6-12, 1 case. Hiroshima, June 6-12, 6 cases.
Do	June 28-Oct. 17	409	223	
Nagasaki	June 21-27	7		
Do	June 28-July 18	34	13	
Osaka	June 8			Present.
Taiwan Island	May 22-June 20	60	33	
Do	July 11-Sept. 20	1,193	440	
Java:				
West Java—				
Batavia	Apr. 30-June 3	6	2	June 4-17: Present.
Do	June 25-Aug. 12	3		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

CHOLERA—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Philippine Islands				May 9–June 26, 1920: Cases, 16; deaths, 12. June 27–July 17, 1920: Cases, 63; deaths, 31. July 25–31: Cases, 57; deaths, 48.
Manila	May 9–June 26	5	1	
Do	June 27–Sept. 25	5		
Provinces—				
Albay	May 9–15	2	1	
Batangas	June 27–July 3	1		
Bohol	do	1	1	
Cagayan	May 9–June 26	11	19	
Do	June 27–Aug. 21	41	14	
Cavite	Sept. 5–11	1	1	
Iloilo	June 27–July 17	3		
Isabela	July 11–31	13	14	
Laguna	July 4–10	8		
Misamis	July 11–17	4	2	
Nueva Viscaya	July 25–31	49	42	
Pangasinan	July 4–Aug. 7	7	5	
Poland:				
Warsaw	Oct. 28	1	1	Case occurred in employee on river boat plying between Warsaw and Danzing.
Russia				Reported prevalent in southern Russia, June 4, 1920.
Grodno	Oct. 18			Present.
Sebastopol (district)	June 20			Reported increasing.
Simieropol				Jan.–June, 1920: Cases, 1,262; deaths, 584. South Russia, Government of Tauride.
Vilna	Sept. 28	40		Oct. 18: Present.
Siam:				
Bankok	Apr. 25–June 26	542	343	
Do	June 26–Sept. 4	61	26	
Straits Settlements:				
Singapore	July 18–Sept. 14	25	24	
Sumatra:				
Medan	Aug. 20–Sept. 3	1	1	On local steamship. From Singapore.
Turkey:				
Amassia	Dec. 24	1		Asiatic Turkey.
Kaiseri	Dec. 22	1		Do.
Karassi	Jan. 3	1		Do.
Mamuret-ul-Aziz	Dec. 31	1	1	Do.
Panderma	Dec.–Jan.	16	6	
Rodosto	Dec. 29	1		European Turkey.
Smyrna	Dec. 22	3	2	Asiatic Turkey.
On vessel:				
S. S. Keketticut	Aug. 2	1		U. S. S.: At Shanghai.
Steamship (local)	Aug. 20–Sept. 3	1	1	At Medan, Island of Sumatra. From Singapore.

PLAGUE.

Algeria:				
Algiers				Sept. 1–30, 1920: Cases, 3; deaths, 1.
Azores:				
St. Michaels	Oct. 4–20	35	12	Oct. 4, 1920: 5 suspect cases isolated vicinity of Ponta Delgada. Oct. 1–31, 1920: Cases, 76; deaths, 27. To Nov. 16: Cases, 110; deaths, 38.
Do	Nov. 10–16	25	8	
Ponta Delgada	Oct. 1–26	2		
Brazil:				
Bahia	Apr. 25–May 22	10	10	
Do	June 27–Oct. 28	12	5	
Pernambuco	May 3–9	1	1	
Do	June 28–Aug. 15	32	16	
Porto Alegre	June 27–Aug. 21		2	
British East Africa				Apr. 1–30, 1920: Cases, 22; deaths, 9.
Kisumu	Apr. 25–June 26	14	12	
Do	July 11–Sept. 4	10	5	Present.
Mombasa	Apr. 25–June 26	104	39	
Do	June 27–Aug. 28	113	72	
Nairobi	Apr. 25–June 10	14	8	
Ceylon:				
Colombo	May 25–June 12	7	2	
Do	June 27–Oct. 2	36	32	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chile				Mar. 1-May 31, 1920: Cases, 15, deaths, 2. Plague reported in Departments of Tacna and Tarata.
Antofagasta	May 17-June 20	5		Mar. 1-May 31, 1920: Cases, 7; deaths, 1.
Do	July 5-Oct. 9	3		
Iquique	Mar. 1-May 31	8	1	
China:				
Amoy	June 20-Sept. 18		8	
Hongkong	Apr. 4-June 26	90	70	
Do	June 27-Aug. 21	26	23	
Ecuador:				
Guayaquil	Aug. 16-Sept. 30	9	1	
Egypt				Jan. 1-Sept. 30, 1920: Cases, 420; deaths, 245.
Cities—				
Alexandria	June 18-Sept. 19	12	7	
Port Said	Aug. 2-Sept. 24	3		
Suez	May 13-June 8	12	6	3 cases pneumonic.
Do	July 3-Aug. 4	4	3	
Provinces—				
Assiout	May 15-June 5	7	4	
Do	July 2-Sept. 13	7	1	
Beni-Souef	July 7-10	2	1	
Fayoum	June 5	1		
Garbieh	....do	1		
Do	July 1-Sept. 28	19	14	
Girgeh	Sept. 22	1	1	Pneumonic.
Keneh	May 18	1		
Mariut	May 18-June 8	19	22	
Do	July 3-9	1	2	
Minieh	May 15	2	1	Septicemic.
Do	July 13	1		
Fiume	Sept. 21	4	2	
Great Britain:				
Liverpool	June 20-26	1	1	
Greece:				
Athens	Aug. 19-Oct. 14	3	2	
Chios	Oct. 14	1		
Dante	July 22	2		
Kavalla	July 5-Oct. 3	4		
Nauplia	Aug. 21	2		Approximately 20 cases Sept. 9.
Pireus	June 29-Sept. 29	12	1	
Saloniki	Sept. 25-Oct. 8	4		
India				Apr. 18-June 26, 1920: Cases, 12,476; deaths, 9,961. June 27-Sept. 18, 1920: Cases, 27,396; deaths, 20,840.
Bombay	Apr. 18-June 26	170	135	
Do	June 27-Sept. 11	55	45	
Calcutta	May 2-June 12	26	19	
Karachi	May 9-Sept. 25	78	71	
Madras Presidency	May 9-Oct. 2	7,359	5,293	
Rangoon	Apr. 25-June 26	120		
Do	June 27-Aug. 21	233	193	
Indo-China				Jan. 1-31, 1920: Cases, 42; deaths, 40. Feb. 1-29, 1920: Cases, 41; deaths, 36. Mar. 1-31, 1920: Cases, 79; deaths, 70. Apr. 1-30, 1920: Cases, 69; deaths, 63. May 1-31, 1920: Cases, 87; deaths, 75.
Saigon	May 10-June 13	9	2	
Do	July 26-Aug. 15	5	4	
Italy:				
Catania	June 22-July 3	3	2	
Java:				
East Java				Apr. 23-May 5, 1920: Cases, 7; deaths, 7. Apr. 15-June 16, 1920: Cases, 8; deaths, 8. Aug. 5-25, 1920: Cases, 4; deaths, 4. Surabaya Residency.
West Java—				
Batavia	July 22-Sept. 9	15	15	
Mesopotamia:				
Bagdad	June 1-30	6	3	
Mexico:				
Cerritos	Nov. 15	15		State of San Luis Potosi. Present in vicinity.
Tampico	July 26-Sept. 27	4	3	
Vera Cruz	June 14-20	11	1	May 29-July 14, 1920: Cases, 49; deaths, 29. Corrected statement: From outbreak in May to July 20, 1920—cases, 58; deaths, 36.
Do	July 18-24	2	2	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

PLAGUE—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Peru				Mar. 1–31, 1920: Cases, 46; deaths, 29. Apr. 1–30, 1920: Cases, 36; deaths, 13. In coastal departments.
Callao	Mar. 1–Apr. 30	15	7	
Do	Aug. 1–31	1		
Lima (city)	Mar. 1–31	5	3	
Do	Apr. 1–30	4	4	
Lima (country)	Mar. 1–31	1	1	
Do	Apr. 1–30	1		
Mollendo	Mar. 1–31	13	9	
Paita	do	5	2	
Do	Apr. 1–30	2		
Salaverry	Mar. 1–31	4	3	
Do	Apr. 1–30	1		
San Pedro	do	6	1	
Trujillo—Salaverry	May 31–June 29	3	2	
Do	Aug. 30–Oct. 25	6	13	
Russia:				
Batum	Sept. 28			Prevalent.
Siam:				
Bangkok	Apr. 25–June 5	8	5	
Do	June 28–Aug. 28	6	3	
Straits Settlements:				
Singapore	Apr. 25–June 19	14	13	
Do	July 11–Aug. 7	3	3	May 16–22, 1920: Cases, 2; deaths, 3.
Syria:				
Beirut	June 30			Present.
Turkey:				
Constantinople	July 25–Aug. 21	7	6	
Uruguay:				
Montevideo	June 1–30	1	1	

SMALLPOX.

Algeria:				
Departments—				
Algiers	May 11–Aug. 31	51		City of Algiers, Apr. 1–30, 1920: 1 case. July 1–Aug. 31, 1920: Cases, 4; deaths, 2.
Constantine	June 1–Aug. 31	18		
Oran	May 11–Aug. 31	108		
Austria				May 30–June 26, 1920: Cases, 27. June 27–July 10, 1920: Cases, 22.
Vienna	May 30–June 26	1		
Azores:				
Ponta Delgada	July 17–Aug. 20	7		
St. Michaels	Aug. 21–27	1		From Madeira.
Bolivia:				
La Paz	May 2–June 30	10	8	
Do	July 1–Aug. 31	11	5	
Brazil:				
Bahia	Apr. 25–June 26	5	5	
Do	June 27–Sept. 11	20	2	
Pernambuco	Mar. 29–June 27	114	3	
Do	June 30–Sept. 19	210	4	
Rio de Janeiro	Apr. 11–June 26	431	6	
Do	June 27–Aug. 21	45	9	
Santos	Mar. 24–28	1		
Do	July 25–Aug. 15		8	
Sao Paulo	June 21–27		1	
Do	June 27–Aug. 8		2	
British East Africa				Mar. 1–31, 1920: Cases, 107. Apr. 1–30, 1920: Cases, 69. Reported by native inspectors.
Mombasa	May 2–22	2	1	
Do	July 11–17	3		
Nairobi	May 23–June 26	11	1	
Do	Aug. 1–21	5		
Bulgaria:				
Sofia	July 11–17	1		
Canada:				
Alberta—				
Calgary	June 3–9	1		
Do	July 4–Oct. 9	6		
British Columbia—				
Vancouver	May 16–Aug. 28	4		
Manitoba—				
Winnipeg	May 29–June 5	3		
Do	Aug. 8–21	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
New Brunswick—				
Bonaventura and Gaspe Counties.	Aug. 1–Oct. 31	2		
Carleton County	Sept. 19–25	1		
Gloucester County	May 31–June 26	5		
Do	Sept. 19–Oct. 9	3		
Queens County	July 4–Aug. 21	7		
Restigouche County				Sept. 26–Oct. 2, 1920: Case, 1.
Campbellton	July 1–31	7		
Nova Scotia—				
Halifax	do	2		
Sydney	May 31–June 26	2		
Ontario—				
Cornwall	June 25–30	2		
Fort William and Port Arthur.	July 11–Oct. 2	4		
Hamilton	June 13–Oct. 30	9		
Kingston	May 31–June 19	4		
Montreal	Oct. 24–30	1		
North Bay	June 23–2	1		
Do	July 11–Oct. 23	8		
Ottawa	June 6–26	32		
Do	June 27–Nov. 6	135		
Peterborough	Apr. 18–July 31	33	1	
Prescott	July 11–17	1		
Do	Aug. 1–14			Present at Cardinal and Brockville.
Sault Ste. Marie	Oct 24–30	1		
Toronto	June 6–19	13		
Do	June 26–Nov. 6	31		
Windsor	Aug. 22–Sept. 11	5		
Prince Edward Island—				
Charlotte Town	Aug. 12–Oct. 13	2		
Quebec—				
Montreal	June 13–19	1		
Do	July 4–Aug. 7	4		
Quebec	June 27–Oct. 2	9		
Saskatchewan—				
Moose Jaw	June 26–30	6		
Do	July 25–Sept. 25	3		
Regina	June 2–30	1		
Do	Oct. 3–30	4		
Saskatoon	Sept. 5–Oct. 23	8		
Ceylon:				
Colombo	May 9–June 5	2		
Do	Aug. 29–Oct. 2	35	5	
Chile:				
Antofagasta	May 17–23			1 case in interior.
China:				
Amoy	May 2–Sept. 18	4	15	
Antung	May 9–June 13	3	3	
Do	June 21–27	1		
Chungking	May 2–June 9			Present.
Do	July 11–Oct. 2			Do.
Foochow	May 9–29			Do.
Do	July 25–Oct. 2			Do.
Hankow	June 20–26	2		
Harbin	Sept. 27–Oct. 3	1		Year, 1919: Cases, 79. On Eastern Chinese R. R. line. At other stations, 109 cases.
Hongkong	Apr. 4–June	19	15	
Do	June 27–July 17	2	2	
Mukden	July 19–Oct. 9			Present.
Nanking	May 9–June 5			Do.
Do	July 4–Oct. 9			Do.
Tientsin	May 25–31	2		
Do	June 16–29	2		
Tsinanfu	May 9–15	1		
Chosen (Korea):				
Chemulpo	Mar. 1–June 30	69	40	
Do	July 1–31	18	8	
Fusan	Mar. 1–June 30	24	6	
Do	July 1–31	1	1	
Seoul	Mar. 1–June 30	358	86	
Do	July 1–31	15	6	
Colombia:				
Barranquilla	May 13–July 3			Epidemic.
Santa Marta	May 31–Oct. 16			Present.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Cuba:				
Antilla	Aug. 24–Oct. 23	3		
Habana	July 4	1		From steamship Frank Hennis, from Jamaica. Arrived Santiago June 30, 1920.
Matanzas	Aug. 15–21	1	1	In vicinity, at Aguacate, Aug. 1–7, 1920: Cases, 12.
Cyprus				August, 1919: Cases, 242; deaths, 54.
Czechoslovakia:				
Moravia	Feb. 1–2	68		
Danzig	June 20–July 17	9	2	
Egypt:				
Alexandria	May 14–June 29	53	19	
Do	June 25–Sept. 30	13	4	
Cairo	Apr. 2–June 24	62	23	
Do	July 2–Aug. 5	3		
Port Said	Apr. 2–June 24	22	8	
Do	July 2–15	2	1	
France:				
Brest	May 15–31	1		
Cette	June 21–30		1	
Nice	June 1–30		1	
Paris	May 1–10	3		
Germany				Feb. 22–June 12, 1920: Cases, 720. July 11–24, 1920: Cases, 26; deaths, 6. Additional cases, June 13—July 10, 1920, 24; deaths, 2.
Great Britain:				
Edinburgh	Aug. 29–Sept. 4	7	1	
Glasgow	May 2–June 26	136	22	
Do	July 4–Oct. 16	171	48	
Liverpool	July 18–Sept. 11	2		
London	June 13–July 19	14		
Manchester	Aug. 22–28	5		
Greece:				
Saloniki	May 31–June 27	4	1	
Do	July 25–Aug. 15	1	1	
Haiti				Nov. 6, 1920: Approximately 35 cases.
Jacmel	Nov. 6	1		In vicinity
Port au Prince	Sept. 22	5		
India				Apr. 11–May 22, 1920: Deaths, 7,743. May 30–June 26, 1920: Deaths, 3,864.
Bombay	Apr. 25–June 26	103	45	May 9–15, 1920: Cases, 26; deaths, 11.
Do	June 27–Sept. 4	49	11	
Calcutta	May 2–June 12	101	93	
Do	July 18–Sept. 18	9	8	
Karachi	May 9–June 26	15	12	
Do	June 27–July 10	7	4	
Madras	May 9–June 26	27	15	
Do	June 27–Oct. 2	43	17	
Rangoon	Apr. 25–June 26	35	14	July 1–31, 1920: Cases, 22; deaths, 4.
Do	Aug. 8–21	5	2	
Indo-China				Jan. 1–31, 1920: Cases, 410; deaths, 101. Feb. 1–29, 1920: Cases, 625; deaths, 119. Mar. 1–31, 1920: Cases, 782; deaths, 114. Apr. 1–30, 1920: Cases, 312; deaths, 25. May 1–31, 1920: Cases, 428; deaths, 61.
Saigon	May 10–June 13	12	3	
Do	Aug. 3–Sept. 5	1	1	
Italy:				
Catania	July 12–Oct. 3	91		City and Province, Sept. 13–26, 69 cases in district.
Genoa	May 17–23	12		In Province.
Do	June 14–27	20		
Do	June 28–July 4	3		
Messina	May 10–June 27		1	Province, May 10–June 27: Cases, 168; deaths, 27.
Do	June 28–Oct. 3	14	3	Province: Cases, 35; deaths, 3.
Milan	Mar. 1–May 31	3	5	
Naples	May 23–June 20	7	3	
Palermo	May 11–Sept. 30	166	29	
Trieste	Sept. 25–Oct. 2	16	5	
Turin	June 28–Sept. 12	2		

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Jamaica:				
Kingston				Previous report "July 22—present," was erroneous.
Japan:				
Kobe	May 9–June 27	10	5	
Do	June 28–July 18	7	2	
Taiwan Island	May 1–June 20	40	11	
Do	June 21–July 20	14	8	
Tokyo	Apr. 21–May 10	5	4	
Java:				
West Java				Apr. 16–June 24, 1920: Cases, 56; deaths, 10. June 25–Sept. 16, 1920: Cases, 63; deaths, 20.
Batavia	Apr. 16–June 17	94	26	
Do	July 9–Sept. 16	6	2	
Jugo-Slavia				Feb. 1–June 23, 1920: Cases, 2,519; deaths, 561.
Madeira:				
Funchal	June 20–26		2	
Do	July 18–21			Sept. 12–18, 1 case.
Malta	May 1–June 30		3	
Manchuria:				
Mukden	May 2–8			
Mesopotamia:				
Bagdad	July 1–31	1		
Mexico:				
Ciudad Juarez	Aug. 2–8	1		
Guadalajara	May 1–31	1		
Do	July 1–31	3		
Laredo	July 30	2		
Mazatlan	May 19–25		1	
Salina Cruz	June 1–30	5	3	
Do	Aug. 1–31	1	1	
San Luis Potosi	May 21–June 6		1	
Do	June 28–Oct. 30		12	
Tampico	July 1–31		5	
Newfoundland:				
Broad Cove	Sept. 4–10	1		
Ladle Cove	Sept. 11–17	6		
St. Johns	June 5–11	3		Reported at 2 other localities.
Shoal Harbor	July 10–16	7		July 3–16: Present at 4 localities.
New Zealand:				
Dunedin	Aug. 10–Sept. 20	15		
Poland				Jan. 1–31, 1920: Cases, 1,895; deaths, 301.
Minsk District	Jan. 1–31	1,052	228	
Porto Rico:				
Caguas	Aug. 9–15	1		
Portugal:				
Lisbon	May 16–June 28		8	
Do	June 27–Oct. 16		26	
Portuguese East Africa:				
Inhambane	Sept. 12–18	1		
Lourenco Marques	do	2		June 1–Aug. 31, 1920: Deaths, 1.
Russia:				
Riga	Aug. 1–Sept. 23	3		May, 1920: Cases, 5. June, 1920: Cases, 7.
Vladivostok	Jan. 1–June 30	252	78	
Do	July 1–31	2		
Spain:				
Barcelona	May 19–June 12		4	
Do	June 18–Sept. 29		20	
Corunna	July 16–Oct. 2		2	
Malaga				Aug. 1–31, 1920: Deaths, 3.
Orense, Province	Sept. 6			Present.
Valencia	May 23–June 26	15	3	
Do	July 4–Oct. 2	11	3	
Vigo	May 31–June 26		4	
Do	July 18–Oct. 2		10	
Straits Settlements:				
Singapore	May 16–22	1		Received out of date.
Sweden:				
Stockholm	Sept. 19–25	2		
Switzerland:				
Geneva	May 9–15	7		
Syria:				
Aleppo	Aug. 29–Sept. 4			In city and in Armenian orphanage.
Tunis:				
Tunis	May 25–June 27	6	5	
Do	June 28–Oct. 17	38	17	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

SMALLPOX—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Turkey:				
Constantinople	May 16–June 19	7		
Do	June 20–Oct. 16	13		
Union of South Africa:				
Johannesburg	May 1–31	23		
Do	July 1–31	15		
On vessel:				
S. S. Henry R. Mallory	Oct. 2	1		At Habana from Spanish port. Vessel left Vigo, Spain, Sept. 19.

TYPHUS FEVER.

Algeria:				
Departments—				
Algiers	May 11–Aug. 31	44		
Constantine	May 21–Aug. 31	20		
Oran	May 11–Aug. 31	352		
Austria				Feb. 15–June 26, 1920: Cases, 67.
Vienna	Feb. 15–June 26	65		
Belgium:				
Ghent	Sept. 11–Oct. 9	9	1	
Bermuda:				
Hamilton	Oct. 18–23	2		
Bolivia:				
La Paz	May 2–June 30		17	
Do	July 1–31		12	
Brazil:				
Ceara	Apr. 25–June 12		4	
Do	July 11–24		2	
Bulgaria:				
Sofia	June 20–25	2		
Chile				Mar. 1–June 30, 1920: Cases, 1,338, deaths, 244.
Antofagasta	July 5–11			Present.
Caleta Colosa	May 10–16		2	
Concepcion	Mar. 8–June 28	31	39	
Do	June 29–Sept. 20		13	
Coquimbo	Aug. 8–Oct. 7	1	1	
Santiago	Mar. 1–June 30	470	86	Sept. 10: Cases, 186.
Valparaiso	May 2–Sept. 24		29	
China:				
Antung	July 12–Oct. 3	51	7	Report week ended July 31, 1920, not received.
Eastern Chinese Railway	Aug. 9–Sept. 28	5		At stations on line.
Harbin				On Eastern Chinese Railroad line. Year 1919: Cases, 301. At other stations on line, 789 cases.
Chosen (Korea):				
Chemulpo	June 1–30	3		
Seoul	Mar. 1–Apr. 30	4	1	
Czechoslovakia				Feb. 1–28, 1920: Cases, 88; deaths, 7.
Leipnik	Feb. 22–28	1		Quarantine station.
Danzig	June 20–26	1		Feb. 27–Mar. 27, 1920: Cases, 16.
Do	July 25–31	1	1	
Egypt:				
Alexandria	May 7–June 24	338	86	
Do	June 25–Oct. 7	141	62	
Cairo	Apr. 2–June 24	867	370	
Do	July 9–29	72	51	
Port Said	Apr. 9–June 24	112	53	
Germany				Feb. 22–Mar. 27, 1920: Cases, 23. Among troops, 4; among persons from Poland, 8. Mar. 28–June 26, 1920: Cases, 93. July 11–24, 1920: Cases, 2. Additional cases, June 18–July 10, 16.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

TYPHUS FEVER—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Great Britain:				
Dublin	May 23–June 19	3	1	
Do	Oct. 16–22	23		
Dundee	July 4–10	1		
Glasgow	May 30–June 5		1	
Queenstown	Aug. 1–7	1		
Greece:				
Athens	June 27–July 21		5	
Drama	July 12–18	1		
Patras	June 29–July 4		1	
Piraeus	June 29–July 5		1	
Saloniki	Apr. 12–27	394	42	
Do	June 28–Oct. 10	133	57	
Guatemala:				
Guatemala City	Aug. 9–15		1	
Hungary				Jan. 19–May 30, 1920: Cases, 54.
Budapest	Jan. 10–May 23	27		
Italy:				
Catania	July 10–17	3		
Trieste	May 16–22	5		
Do	June 13–Sept. 25	186	15	
Japan:				
Kobe	Aug. 17–23	7		
Nagasaki	May 25–June 27	2	1	
Do	Sept. 13–Oct. 10	2		
Jugo-Slavia				Feb. 1–June 23, 1920: Cases, 691; deaths, 92.
Java:				
East Java—				
Surabaya	June 10–16	1		
West Java—				
Batavia	May 28–June 30	5	1	
Mesopotamia:				
Bagdad	Aug. 1–31	1		
Mexico:				
Chihuahua	May 31–June 6		1	
Nogales	Aug. 9–14	2		
San Luis Potosi	June 8–July 8			Present.
Do	July 2–Aug. 15		2	Sept. 19. Present.
Poland				Jan. 1–Mar. 31, 1920: Cases, 87,910; deaths, 19,733.
Warsaw				Jan. 1–Feb. 29, 1920: Cases, 911; deaths, 117.
Serbia				Mar. 14–Apr. 10, 1920: Cases, 181; deaths, 23.
Portugal:				
Oporto	Apr. 4–June 24	15	6	
Do	Aug. 1–Oct. 2	5		
Russia:				
Riga	June 25–Sept. 23	68		
Simferopol				Jan.–June, 1920: Cases, 3,955; deaths, 500.
Vilna	Sept. 28	35		
Vladivostok	May 1–21	22	2	Jan. 1–Apr. 30, 1920: Cases, 1,264; deaths, 144.
Do	July 1–Aug. 31	36	4	
Spain:				
Barcelona	July 9–15		1	
Madrid	June 1–30		1	
Switzerland:				
Geneva	June 28–July 4	1		
Tunis:				
Tunis	May 24–June 27	36	18	
Do	July 6–Aug. 31	1	1	
Turkey:				
Constantinople	May 16–June 12	27		
Do	June 19–Oct. 9	25		
Venezuela:				
Maracaibo	July 21–27		1	

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

Reports Received from June 26 to Nov. 19, 1920—Continued.

YELLOW FEVER.

Brazil:				
Bahia	May 23-June 19	1		
Colombia:				
Buenaventura	June 3	1	1	
Guatemala				Oct. 25, 1920: Present.
Los Amates	Aug. 5-Sept. 1	10	3	Aug. 17: Present at several localities.
Quirigua	Aug. 9-15			Present.
Virginia	Sept. 10	1		Station on railway from Puerto Barrios to Guatemala City, 45 miles from Puerto Barrios.
Mexico:				
Culiacan	Oct. 16			Present.
Empalme	Oct. 12	1	1	
Guaymas	do		1	Previously reported, 2 deaths; later information shows 1 death.
Mazatlan	Oct. 13	1	1	
Progreso	July 30	1		
Do	Aug. 4-18	4	2	July 30-Aug. 18, 1920: Cases, 5; deaths, 3.
Puerto Mexico	Aug. 24-27	1	1	Case arrived Aug. 23 on s. s. Melchor Ocampo from Progreso. Previously reported P. H. R., Sept. 10, 1920.
San Blas	Sept. 13	1		
Tampico	Sept. 17	1		
Do	Sept. 21-Nov. 4	3	2	
Tuxpam	Sept. 1		2	Aug. 26-Sept. 1, 1920: Cases, 5; deaths, 5; Oct. 21-27, 1920: Cases, 27. Aug. 26-Oct. 27, 1920, cases 112; deaths 59.
Vera Cruz	June 22		2	
Do	July 19-Nov. 14	88	73	
Yucatan State—				
Campeche	Oct. 13	1	1	In sailor from s. s. Yumuri. The vessel left Vera Vruz Oct. 1 for Campeche and New Orleans.
Hocoba	Sept. 8	8		In interior.
Hunuema	Sept. 8-Oct. 11	2	1	Do.
Merida	Nov. 5	1		From Hunuema.
Sotuta	Sept. 8	1	1	In interior
Peru				Mar. 1-31, 1920: Cases, 228; Apr. 1-20, 1920: Cases, 64.
Callao	Apr. 1-30	1		At quarantine station. From s. s. Huallaga.
Catacaos	Mar. 1-31	14		
Do	Apr. 1-30	2		
La Huaca	Mar. 1-31	9		
Do	Apr. 1-30	5		
Morropon	do	37		
Mo nue la	Mar. 1-31	12		
Paita	do	81		
Do	Apr. 1-30	14		
Piura	Mar. 1-31	1		
Do	Apr. 1-30	4		
Salitral	Mar. 1-31	2		
Sullana	do	9		
Do	Apr. 1-30	1		
Salvador				Sept. 12-18, 1920: 1 case; Aug. 22-Oct. 11; 1920: Cases, 3; deaths, 1.
Armenia	June 20-26	1	1	
San Salvador	Aug. 1-21	6	2	Fatal cases were in Europeans.
Sonsonate	May 22-June 24	49	17	
On vessels:				
S. S. Haraldshaug	Sept. 28	1		At Pensacola, Fla. From Puerto Barrios, Tampico, and Vera Cruz.
S. S. Soestdijk	Sept. 11	1	1	At Quarantine, La.
S. S. Yumuri	Oct. 13	1	1	At Campeche. Vessel left Vera Cruz Oct. 1, 1920.